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Ninth Annual Report
OF THE
BOARD OF HEALTH.



1880-81.

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NINTH ANNUAL REPORT
OF THE
BOARD OF HEALTH
OF THE
CITY OF BOSTON,
FOR THE
Financial Year 1880-81.



BOSTON:
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1881.

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Alfred B. Heath, M.D.	<i>Port Physician.</i>
Charles A. Huse, M.D.	<i>Asst. Port Physician.</i>
William L. Richardson, M.D.	<i>Medical Inspector.</i>

[DOCUMENT 87 — 1881.]

CITY OF BOSTON.



NINTH ANNUAL REPORT

OF THE

BOARD OF HEALTH

OF THE

CITY OF BOSTON,

For the Financial Year 1880-81.

OFFICE OF THE BOARD OF HEALTH,
32 PEMBERTON SQUARE, BOSTON, May 1, 1881.

To the Honorable the Mayor and City Council of Boston: —

In accordance with the city ordinances the Board of Health herewith respectfully submits its ninth annual report, for the year ending April 30, 1881.

THE CITY'S SANITARY CONDITION.

In making a sanitary review of the city it would be a convenience to have a universally accepted standard, by which we might compare our own city in its various parts, and say just wherein its sanitary shortcomings lie, and expose them to the acceptance of all. But, in the absence of such a standard, we must make such comparisons and criticisms as seem to us reasonable. It would be manifestly unfair to compare the cleanliness or healthfulness of one city with

another, by taking into the account only one of the many features which go to make up a generally clean, healthy city. One city will be very clean, but badly located; another will be well located, with all of the natural advantages, and yet be kept very unclean,—one condition neutralizing the other. We know of no city that can boast of being strictly clean, or in a perfect sanitary condition. Our own has its natural and artificial advantages and disadvantages. About one half of the city proper, East Boston, South Boston, and Charlestown, is built upon made land, where the greatest care becomes necessary to prevent the foul gases, which lie just below the cellar bottom, from communicating with the interior of the dwellings, and where the public sewers have little or no incline. The other half of these sections, and also Roxbury, Dorchester, and Brighton, are situated on a higher and an undulating surface, which gives the natural advantages for drainage and sewerage. The fact of its being made land, however, is not in itself necessarily an evil, but rather the low grade at which we find it. The City of Boston, by its Board of Aldermen, fixes the minimum grade of the new-made parts of the city at twelve for building, and the streets at eighteen. Many of the older parts of Boston, however, are covered with dwellings at grade six or seven, and the streets at twelve to seventeen. We are nearly surrounded by tide water, with an average tide of ten feet, and this occasionally rises to grade sixteen. This gives a permanent ground water level, much too near the surface for health and safety, and a great many wet cellars. Great care has been used on the Back Bay to prevent the cellars from being wet: but some other parts of the city with a low grade have been less fortunate, and the sanitary condition is not good.

The streets of the city are well swept, and are generally in a good condition, so far as relates to filth, snow, ice, or other obstruction. The old cobble-stone pavement is rapidly disappearing, and in place of it we have the granite block, or asphalt pavement, which gives a smooth surface for the new sweeping-machines, all of which are great improvements. The lanes, alleys, passage-ways, and courts of the city are generally in a bad condition, and subject to great deal of com-

plaint. These places are owned by the abutters, and are receptacles for all sorts of refuse and waste. Every estate abutting on them contributes to their dirty condition, but nobody assumes the care of them. It often costs more to get the places cleaned by the abutters than to do it ourselves. Occasionally we are able to secure the grading and paving, or asphaltting, of such places, and this gives permanent relief. This ought to be done with every private street in the city, and then the showers of rain, instead of rendering the places almost impassable with mud, will make them perfectly clean.

The tenement-houses, of which there are upwards of 2,500, have greatly improved in the last few years; they are less crowded, better cleaned, the cellars and yards are less filthy, and the drains and traps are better provided. About one-fifth of our population reside in tenement-houses, where much more supervision and care are required by sanitary authority than in single dwellings. Tenement-houses, as a rule, are against all sanitary order, and largely promote a high death-rate. The great blessings which come from sunlight and good ventilation are not sufficiently provided for in their construction, and are rarely appreciated or sought for by the occupants. It is plainly unfair to compare the death-rate of one city, whose population is largely in tenement-houses, with another whose population is scattered in single dwellings, where individual care and personal pride greatly promote cleanliness. Our tenement-houses are visited regularly by sanitary inspectors four times each year, and as much oftener as complaints are made.

The condition of stables, and the method of removing manure therefrom, have both been greatly improved, and there are now comparatively few objectionable features about them to be complained of. The old and offensive method of removing night-soil by bucket and wagon has nearly gone out of existence, and has been superseded by the new and almost odorless process. The old process had to be confined to the night-time, was attended by many difficulties, and caused great annoyance and danger to the health of the people. The new process may be used at noonday with little or no offence to the people about it. House offal, house dirt, and

ashes are removed from dwellings in all parts of the city at short intervals.

Dead animals, such as horses, mules, cows, pigs, and goats, are immediately removed from the city on notification to the proper parties. Offensive trades of nearly all kinds have been regulated. Slaughter-houses have been entirely abandoned, and the work is now all done in the Abattoir, whose capacity is increasing yearly, and which is conducted with very little offence to anybody. Bone-boiling and fat-rendering establishments, lime-kilns, phosphate works, and a variety of other offensive trades, are scattered here and there about the city; but nearly all have undergone such modification within a few years as to be comparatively unobjectionable, and of which very few complaints are now made. The storing and curing of hides and horns within the city have been regulated and largely deprived of their offensive character. The wharves are kept in a clean and presentable condition. The condition of the principal markets of the city is a source of pride, and they are rarely found in any degree untidy.

The docks and flats about the city, we regret to say, are in a very filthy and offensive state, owing to the large amount of sewage which is discharged directly upon them. This condition will be greatly modified by the use of the new intercepting sewer, the completion of which we hope to see within two years.

The exposed surface of the Back Bay at low tide still sends its nauseating odors across the city with every westerly breeze. It is thought that the new sewer will measurably relieve this portion of the city next year. There is, however, a large amount of dredging and filling to be done in this territory, after the sewage has been turned elsewhere, before the offence which now comes from this exposed surface will be removed. Many of the old sewers are without sufficient pitch, are inefficient, offensive, and contain much matter that ought to have a quick flow to a safe distance from the city. They discharge slowly into the docks at ebb-tide, and clog on the flood. Many of the public cesspools, or catch-basins, at the sides of the streets, contain a large amount of animal and vegetable refuse from the streets, and during

warm weather are exceedingly offensive. Some of them get dry by evaporation, and allow a free passage of sewer-gas into the streets. They ought to be trapped and frequently flushed with water.

In brief, our public streets, wharves, and markets are clean. House-offal, ashes, house-dirt, night-soil, and stable-manure are promptly and neatly removed. Grease, bones, and other refuse material for fat-rendering, are quickly gathered in clean carts and taken away. Dead animals are removed before decomposition gives offence. Tenement-houses and other dwellings are in a fair condition. Offensive trades in general are conducted in a reasonably satisfactory manner.

On the other hand, the present disposition of the filth and wastes of the city is wrong, and largely promotes its unsanitary condition. The present state of many of the sewers, docks, exposed flats, and of many of the private streets and ways, is decidedly bad. The grade of a portion of the city is too low, and this condition is a fruitful cause of ill-health to those who occupy such places.

There have been no severe epidemics of diseases since 1873, and the proportion of deaths from preventable causes has greatly decreased. The mortality from all causes has decreased from 31.80 per thousand of the population in 1872, to 20.38 per thousand in 1879. In 1880 the rate was 23.53. The average death-rate from all causes for the last sixteen years, from 1865 to 1880, inclusive, has been 27.95 per thousand of the population. If we divide this period into two parts, of eight years each, we shall divide the epidemic of small-pox, which occurred in 1872 and 1873, and find the average death-rate for the first eight years to be 24.33, and the average for the last eight years to be 23.57. The average death-rate for the last ten years, from 1871 to 1880, inclusive, has been 24.34; but if we divide this period into two parts, of five years each, we find that the rate for the first five years was 27.00, and for the last five years was 21.69. We also find that the average percentage of deaths from preventable causes to the whole number of deaths during the ten years, from 1871 to 1880, has been 28.11; but

for the first half of this period the percentage was 29.29, and for the last half it was 26.92.

MORTALITY.

The number of death certificates presented at this office for approval during the year ending Dec. 31, 1880, exclusive of still-births, was 8,531. The number of still-births whose certificates were presented for approval for the same period was 443.

If we take the census report, which gives us a population of 362,535 on July 1, 1880, we shall find the annual death-rate to be 23.53 per thousand of the population.

The following tables, which pertain to our own city, are compiled from the records of this office, which began in 1875, and from those of the City Registrar prior to that date. Those which pertain to other American and foreign cities, and which are used here for convenient reference and comparison, are made from the official returns of the officers in charge of the vital statistics in the several cities represented.

Table I.—Total of Deaths, Still-births, and Deaths from Zymotic Diseases, for the last Ten Years, with Percentages.

Years.	Total deaths exclusive of still-births.	Still-births.	Total Zymotic.	Diphtheria and Croup.	Scarlet Fever.	Typhoid Fever.	Cerebro-Spinal Meningitis.	Whooping-cough.	Measles.	Diarrhoeal Diseases.	Small-pox.	Percentage of Zymotic deaths to total mortality.	Rate of still-births per 1,000 in habitation.
1871 . . .	5,888	543	1,408	128	111	176	3	30	9	756	23	23.91	1.85
1872	8,090	560	2,823	94	258	229	60	52	60	1,006	738	34.89	1.91
1873	7,860	515	2,626	119	474	243	216	33	16	925	302	33.37	1.76
1874	7,812	642	1,899	121	269	202	35	108	41	940	2	24.30	2.19
1875	9,060	541	2,722	631	534	227	41	41	65	989	1	30.02	1.58
1876	8,23	485	2,439	720	458	145	13	59	2	827	2	29.55	1.41
1877	7,316	471	1,890	471	104	166	24	88	2	913	4	25.83	1.37
1878	7,036	441	1,980	569	68	120	19	88	145	816	..	25.91	1.28
1879	7,398	43	1,935	545	149	119	15	112	2	772	..	26.15	1.24
1880	8,531	443	2,321	774	33	154	8	94	49	1,003	1	27.20	1.22

Table II.—Deaths during the Year 1880.*By Sex, Condition, Color, Nativity, Parentage and Season.*

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Total number of deaths . .	711	633	671	629	631	569	854	903	743	693	664	830	8,531
<i>Sex :</i>													
Males	326	318	309	327	321	295	411	435	380	325	315	406	4,168
Females	385	315	362	302	310	274	443	468	363	368	349	424	4,363
<i>Condition :</i>													
Married	197	183	198	209	205	174	206	193	176	208	183	231	2,363
Single	425	366	369	320	347	333	573	627	500	408	394	500	5,162
Widows	71	61	76	65	51	47	56	68	49	61	58	69	732
Widowers	14	22	17	28	21	9	15	13	15	12	19	23	208
Unknown	4	1	11	7	7	6	4	2	3	4	10	7	66
<i>Color :</i>													
Whites	698	620	653	617	617	554	841	887	726	675	653	822	8,363
Colored	13	13	18	12	14	15	13	16	17	18	11	8	168
<i>Nativity :</i>													
United States	511	460	464	403	442	387	630	686	552	465	441	583	6,024
Ireland	140	111	182	143	128	128	133	134	137	139	145	161	1,631
Scotland	4	3	6	6	0	2	6	5	1	2	4	3	42
England	13	15	14	13	6	2	11	18	12	23	8	17	152
Germany	7	9	10	9	13	4	18	4	7	10	5	13	109
British Provinces	21	20	31	31	24	20	22	35	21	34	39	34	332
Other countries	9	9	8	11	9	12	12	6	6	6	12	10	110
Unknown	6	6	6	13	9	14	22	15	7	14	10	9	131
<i>Parentage :</i>													
American	193	186	178	176	182	161	195	259	202	175	181	210	2,298
Irish	292	238	264	242	251	228	326	335	309	286	264	342	3,397
Scotch	6	5	9	7	0	4	9	6	5	7	4	9	71
English	17	14	16	18	6	8	17	16	13	25	14	21	185
German	24	19	18	12	22	11	30	18	16	18	9	26	223
British Provinces	20	12	22	26	27	24	34	48	26	34	33	40	346
Mixed	69	64	62	53	58	48	96	91	82	64	38	76	801
Other countries	42	48	50	34	31	37	62	67	39	32	49	53	544
Unknown	48	47	52	61	54	48	85	63	51	52	52	53	666

Table III. — Deaths from Principal Zymotic Diseases.

	Total from each disease.	Percentage of each to total mortality.	Deaths per 1,000 inhabitants.	Total deaths per sex.		Total under five years per sex.		Total under five years.	Percentage of each under five years to total mortality.
				M.	F.	M.	F.		
Small-pox	1	.011	.002	1	...	...	...	...	...
Measles	49	.574	.135	25	24	23	18	41	.492
Scarlatina	33	.386	.091	16	17	9	16	25	.293
Diphtheria	588	6.892	1.621	286	302	185	161	346	4.055
Croup	186	2.180	.513	97	89	70	63	133	1.559
Quinsy (Tonsillitis) . . . . .	...	...	...	...	...	...	...	...	...
Whooping-cough	94	1.101	.259	37	57	36	54	90	1.054
Typhus Fever . . . . .	...	...	...	...	...	...	...	...	...
Typhoid Fever	154	1.804	.427	74	80	1	4	5	.058
Yellow Fever . . . . .	...	...	...	...	...	...	...	...	...
Enteritis	62	.726	.173	32	30	25	17	42	.492
Varicella	1	.011	.002	...	1	...	1	1	.011
Erysipelas	24	.281	.066	16	8	9	5	14	.164
Puerperal Fever	62	.726	.173	...	62	...	...	...	...
Carbuncle	3	.035	.008	3	...	...	...	...	...
Influenza . . . . .	...	...	...	...	...	...	...	...	...
Dysentery	127	1.488	.353	61	66	26	19	45	.527
Diarrhoea	214	2.058	.590	101	113	87	84	171	2.004
Cholera Asiatica . . . . .	...	...	...	...	...	...	...	...	...
Cholera-morbus	38	.445	.104	22	16	3	2	5	.011
Cholera-infantum	518	6.071	1.428	251	267	251	267	518	6.071
Cerebro-spinal Meningitis	9	.105	.024	5	4	5	3	8	.093
Congestive Fever . . . . .	...	...	...	...	...	...	...	...	...
Intermittent Fever	5	.058	.013	3	2	...	...	...	...
Remittent Fever	7	.082	.019	5	2	1	...	1	.011
Rheumatism	19	.222	.052	11	8	1	...	1	.011
Pyæmia	4	.048	.011	1	3	...	...	...	...
Syphilis, Congenital	11	.128	.030	7	4	7	4	11	.128
Syphilis, Tertiary	8	.093	.022	6	2	...	...	...	...
Hydrophobia . . . . .	...	...	...	...	...	...	...	...	...
Rickets . . . . .	...	...	...	...	...	...	...	...	...
Purpura	5	.058	.013	2	3	...	2	2	.023
Alcoholism	55	.644	.151	33	22	...	...	...	...
Septicæmia	16	.187	.044	7	9	1	1	2	.023
Entero-colitis	44	.515	.121	17	27	14	27	41	.492
Parotitis	1	.011	.002	1	...	1	...	1	.011

Table IV.—Deaths from Ten of the Principal Causes.

	Tot deaths from each cause.	Percentage of each cause to total mortality.	Deaths per 1,000 inhabitants.	Total deaths per sex.		Total deaths per sex under five years.		Total deaths under five years.	Percentage of each cause under five years to total mortality.
				M.	F.	M.	F.		
Consumption	1,452	17.020	4.005	659	793	38	32	70	.590
Pneumonia	650	7.619	1.792	343	307	128	114	242	2.836
Diphtheria	588	6.992	1.621	286	302	185	161	346	4.055
Cholera-infantum	518	6.071	1.428	251	267	251	267	518	6.071
Heart Disease	434	5.086	1.197	215	219	8	10	18	.210
Accidental and Violent . .	311	3.645	.857	230	81	23	13	36	.421
Bronchitis	310	3.633	.855	151	159	125	99	224	2.625
Marsasmus, Tabes Mesenterica, and Scrofula . . .	244	2.860	.673	120	124	104	111	215	2.519
Diacer	229	2.684	.631	67	162	..	..	..	..
Canarrhoe	214	2.508	.590	101	113	87	84	171	2.004

Table V.—Aggregate and Average Age, and Parentage.

1880.	American parentage.			Foreign parentage.			Mixed parentage.			Unknown parentage.			Total American, Foreign, Mixed, and Unknown.		
	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.	Number of Deaths.	Aggregate Age.	Average Age.
January	198	6,843	35.45	401	11,297	28.17	69	638	9.24	48	1,805	37.60	711	20,533	28.94
February	186	7,174	38.56	336	9,441	28.09	64	414	6.46	47	2,039	43.38	683	19,048	30.12
March	178	6,752	37.98	379	11,281	29.76	62	747	12.03	52	2,279	43.82	671	21,059	31.38
April	176	6,481	36.71	339	11,366	33.52	56	554	10.45	61	2,390	38.98	629	20,741	32.97
May	182	5,795	31.29	337	10,383	30.75	58	484	7.48	54	2,083	38.01	681	18,945	29.54
June	161	5,080	31.42	312	9,976	31.97	45	692	14.43	48	1,355	28.22	569	17,083	30.02
July	195	4,740	24.80	478	10,832	22.66	96	709	7.38	85	1,970	23.17	854	18,251	21.37
August	259	7,275	28.08	490	11,152	22.75	91	247	2.71	63	1,735	27.53	903	20,409	22.60
September	202	5,695	28.19	408	10,470	22.66	88	397	4.47	51	1,061	20.80	743	17,593	23.67
October	176	5,311	30.34	402	11,573	28.78	64	1,109	17.32	52	1,691	32.51	663	19,684	28.39
November	181	5,851	32.32	393	11,533	29.34	38	622	16.36	52	1,444	27.76	664	19,450	29.29
December	210	6,831	32.52	491	13,329	27.14	76	847	11.14	53	1,996	35.96	830	22,913	27.90
* Total	2,298	73,798	32.10	4,766	182,613	27.82	804	7,380	9.21	666	21,098	32.56	8,531	235,479	27.60

Table VI.—Difference in Years between the Average Age of American and Foreign, also the American and Mixed Parentage.

Months.	1880.					
	Average age.		Difference.	Average age.		Difference.
	American.	Foreign.		American.	Mixed.	
January	35.45	28.17	7.28	35.45	9.24	26.21
February	38.56	28.09	10.47	38.56	6.46	32.10
March	37.93	29.76	8.17	37.93	12.03	25.90
April	36.71	33.52	3.19	36.71	10.45	26.26
May	31.29	30.75	.54	31.29	7.43	23.81
June	31.42	31.97	.59	31.42	14.43	16.99
July	24.30	22.66	1.64	24.30	7.33	16.92
August	28.08	22.75	5.33	28.08	2.71	25.37
September	28.19	22.66	5.53	28.19	4.47	23.72
October	30.34	28.78	1.56	30.34	17.32	13.02
November	32.32	29.34	2.98	32.32	16.36	15.96
December	32.52	27.14	5.38	32.52	11.14	21.38
Total	32.10	27.82	4.28	32.10	9.21	22.89

Table VII.—Aggregate of the Average Age of American, Foreign, and Mixed Parentage for each Quarter of the Year 1880.

Parentage.	First Quarter.	Second Quarter.	Third Quarter.	Fourth Quarter.
American	111.94	99.42	80.57	95.18
Foreign	86.02	96.24	68.07	85.26
Mixed	27.73	32.36	14.56	44.32

Table VIII.—Deaths from principal Zymotic Diseases, by Sex, each Month, with Nativity of Parents.

	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents				Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	American.	Foreign.	Mixed.	Unknown.	
Small-pox . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	1	1
Measles . . . . .	..	..	..	..	1	..	..	..	..	..	1	2	2	3	7	2	..	..	..	3	2	5	13	8	25	24	9	30	7	3	49
Scarlatina	3	5	2	1	2	1	1	..	1	..	1	1	2	..	1	1	..	..	1	1	2	3	1	4	16	17	9	17	7	..	33
Diphtheria	23	30	23	15	16	17	13	15	23	25	20	17	22	20	15	18	18	25	19	31	39	40	55	49	286	302	179	280	116	13	588
Croup	5	10	14	9	4	6	5	7	1	3	4	..	3	4	..	1	4	3	17	9	16	13	24	97	89	40	113	33	..	186	
Quinsy (Tonsillitis) . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Whooping-cough	10	13	3	4	7	6	3	9	2	2	1	4	3	2	..	5	3	7	4	3	1	1	..	1	37	57	19	52	22	1	94
Typhus Fever . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Typhoid Fever	4	10	8	1	3	6	6	8	2	3	2	8	4	4	12	7	6	8	14	9	8	7	5	9	74	80	43	89	10	12	154
Yellow Fever . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enteritis	1	1	2	1	..	2	3	1	..	2	6	1	4	4	6	8	4	3	2	1	1	1	3	5	32	30	12	38	6	6	62
Varicella . . . . .	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Erysipelas . . . . .	..	..	1	1	..	..	1	2	3	1	4	..	..	1	..	..	2	1	..	..	3	1	2	1	16	8	7	11	1	5	24
Puerperal Fever	7	..	2	..	8	..	5	..	5	..	4	..	1	..	4	..	6	..	3	..	6	..	11	..	62	13	41	2	6	62	
Carbuncle . . . . .	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	3	..	1	2	..	..	..	3

Table IX.—Ten of the Principal Causes of Death, by Sex, each Month, with Nativity of Parents.

	Jan.		Feb.		March.		April.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.		Total.		Nativity of Parents.				Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	American.	Foreign.	Mixed.	Unknown.	
Consumption . .	53	67	48	59	61	65	59	62	53	58	46	52	53	74	45	64	51	79	60	72	57	75	74	66	659	793	271	1048	49	84	1452
Pneumonia . . .	35	38	40	47	44	33	48	30	37	28	20	8	15	13	12	8	9	10	21	20	21	33	41	39	843	307	190	355	47	58	650
Diphtheria . . .	23	30	23	15	16	17	13	15	23	25	20	17	22	20	15	13	18	25	19	31	39	40	55	49	296	302	179	280	116	13	588
Cholera-infantum	1	..	..	1	..	2	..	1	2	4	13	11	83	96	83	99	60	41	5	10	4	3	..	..	251	267	128	261	102	27	518
Heart Disease . .	20	15	13	16	19	25	23	24	20	14	24	15	20	15	15	16	16	20	14	19	13	17	18	23	215	219	134	241	16	43	494
Accidental and Violent	13	9	9	2	14	8	18	9	24	10	17	10	22	12	18	7	26	3	13	7	26	4	25	5	230	81	65	180	13	53	311
Bronchitis . . .	14	22	20	13	21	13	10	21	10	19	7	8	6	4	6	7	8	4	10	8	19	15	20	25	151	159	63	194	33	15	310
Mesenterica and Scrofula	6	9	5	5	6	9	6	6	11	14	10	8	15	10	19	15	21	14	8	13	4	9	10	12	120	124	65	94	35	50	244
Cancer	9	20	1	12	8	20	3	15	1	14	3	13	10	6	11	12	4	14	6	14	7	13	9	9	67	162	84	117	5	23	229
Diarrhoea	1	1	1	2	3	2	..	..	2	..	5	6	30	30	31	35	21	23	7	8	..	1	..	..	101	113	45	118	27	24	214

Table X.—Deaths from Principal Zymotic Diseases arranged by Age and Sex.

	Under 1 yr.		1 yr. and under 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		Total and under 5 yrs.		5 yrs. and under 10 yrs.		10 yrs. and under 20 yrs.		20 yrs. and under 30 yrs.		30 yrs. and under 40 yrs.		40 yrs. and under 50 yrs.		50 yrs. and under 60 yrs.		60 yrs. and under 70 yrs.		70 yrs. and under 80 yrs.		80 yrs. and under 90 yrs.		90 yrs. and under 100 yrs.		Total of all ages.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
Small-pox	1	.
Measles	7	3	10	6	5	5	1	3	1	23	18	8	25	24	
Scarlatina	1	1	4	2	2	5	1	4	1	4	9	16	3	1	2	16	17	
Diphtheria	15	18	46	40	39	51	50	49	35	33	133	101	74	116	20	14	3	2	2	6	.	1	2	.	.	.	.	.	.	.	.	.	.	286	302
Croup	7	5	21	18	15	18	13	13	14	9	70	63	27	19	.	6	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	97	89
Whooping-cough	19	24	12	22	3	2	1	3	1	3	36	54	.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	37	57
Typhoid Fever . . . . .	.	.	1	.	.	2	.	1	1	1	4	5	16	26	13	16	10	7	7	12	6	3	6	5	.	.	.	.	.	.	.	.	1	74	80
Enteritis	23	13	1	2	1	2	.	.	.	.	25	17	.	4	2	1	2	4	.	.	.	1	4	.	2	.	1	.	.	.	.	.	.	32	30
Varicella	1	1	.	
Erysipelas	9	5	.	.	.	.	.	.	.	.	9	5	.	.	.	1	1	2	.	2	.	2	1	.	.	.	1	.	.	.	.	.	16	8	
Puerperal Fever . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	4	.	34	.	22	.	2	.	.	.	.	.	.	.	.	.	.	.	.	62	.
Carbuncle	3	.	
Dysentery	12	2	6	8	4	5	3	2	1	2	26	19	2	6	4	.	3	6	3	3	5	2	7	10	6	4	10	2	4	.	.	.	61	66			
Diarrhoea	73	64	12	14	.	5	1	1	1	.	87	84	.	2	.	1	4	2	3	6	7	1	3	1	4	2	5	1	1	.	.	.	101	113			
Cholera-morbus	2	.	1	1	.	.	.	.	.	.	3	2	.	3	.	1	.	5	2	1	1	6	3	6	2	.	2	.	.	.	.	.	22	16	
Cholera-infantum	181	212	56	52	10	3	4	.	.	.	251	207	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	251	207

Deaths from Principal Zymotic Diseases. — *Continued.*

	Under 1 yr.		1 yr. and under 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		Total under 5 yrs.		5 yrs. and under 10 yrs.		10 yrs. and under 20 yrs.		20 yrs. and under 30 yrs.		30 yrs. and under 40 yrs.		40 yrs. and under 50 yrs.		50 yrs. and under 60 yrs.		60 yrs. and under 70 yrs.		70 yrs. and under 80 yrs.		80 yrs. and under 90 yrs.		90 yrs. and under 100 yrs.		Total of all ages.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
Cerebro-spinal Meningitis	6	2	1								6	8		1																			6	4			
Intermittent Fever															1																		3	2			
Remittent Fever							1				1				1																		6	2			
Rheumatism							1				1		2		1		2	4	1	2	1	1	8										11	8			
Pyæmia																		1	2														1	8			
Syphilis, Congenital	6	4			2						7	4																							7	4	
Syphilis, Tertiary																	2	1		1	3		1											6	2		
Purpura			1		1								2	2	1																			2	8		
Alcoholism																8	6	6	8	7	9	2	8	2									33	23			
Septicæmia					1						1	1	1	1		1	3	1	1	1														7	9		
Enterocolitis	10	23	2	4	1		1				14	27			1			1																17	27		
Parotitis	1										1																									1	

Table XI.—Ten of the Principal Causes of Death, arranged by Age and Sex.

	Under 1 yr.		1 yr. 2 yrs.		2 yrs. and under 3 yrs.		3 yrs. and under 4 yrs.		4 yrs. and under 5 yrs.		Total under 5 yrs.		5 yrs. 10 yrs.		10 yrs. 20 yrs.		20 yrs. 30 yrs.		30 yrs. 40 yrs.		40 yrs. 50 yrs.		50 yrs. 60 yrs.		60 yrs. 70 yrs.		70 yrs. 80 yrs.		80 yrs. 90 yrs.		90 yrs. 100 yrs.		Total of all ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Consumption	14	13	14	7	8	6	2	6	.	.	38	32	3	6	43	88	186	254	152	165	108	98	69	66	44	45	10	28	6	10	.	.	659	793
Pneumonia	61	54	34	27	17	15	6	10	10	8	128	114	5	5	4	7	28	25	37	24	42	26	38	28	31	42	23	26	7	9	.	.	343	307
Diphtheria	15	18	46	40	39	51	50	49	35	33	185	161	74	116	20	14	3	2	2	6	.	1	2	.	.	1	.	.	.	.	.	286	302	
Cholera-infantum	181	212	56	52	10	3	4	.	.	.	251	257	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	251	267	
Heart Disease	5	7	2	.	.	.	.	1	1	2	8	10	7	3	7	14	18	15	27	29	38	30	41	29	36	52	28	30	5	7	.	.	215	219
Accidental and Violent	7	3	1	2	6	4	4	2	5	2	23	13	11	3	18	6	37	7	57	14	34	10	36	12	9	10	5	4	.	2	.	.	230	81
Bronchitis	93	67	22	22	5	4	3	3	2	3	125	99	1	1	1	2	1	.	4	1	3	8	9	3	17	4	14	4	9	2	1	.	151	159
Marasmus, Tabes Meenterica, and Scrofula	74	91	24	14	6	4	.	1	.	1	104	111	2	1	3	1	.	1	1	1	3	2	3	3	.	4	1	.	3	.	.	120	124	
Cancer . . . . .	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1	3	7	8	10	36	13	62	24	33	6	14	5	6	.	.	67	162	
Diarrhoea	73	64	12	14	.	5	1	1	1	.	87	84	.	2	.	1	4	2	3	6	7	1	3	1	4	2	5	1	1	.	.	101	113	

Table XII. — The Number and Percentages of Deaths in each Quarter of each Year during a period of Sixteen Years, 1865—1880, inclusive.

YEARS.	JANUARY — MARCH.		APRIL — JUNE.		JULY — SEPTEMBER.		OCTOBER — DECEMBER.		Rate per 1,000 inhabitants.
	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	Deaths.	Per cent.	
1865.....	1,115	24.55	1,068	23.52	1,353	29.80	1,005	22.13	23.6
1866.....	999	22.81	957	21.85	1,338	30.55	1,085	24.78	22.4
1867.....	1,071	24.22	950	21.49	1,191	26.94	1,209	27.35	22.3
1868.....	1,341	24.30	1,203	21.80	1,736	31.45	1,239	22.45	23.9
1869.....	1,374	24.88	1,297	23.43	1,562	28.23	1,290	23.36	23.4
1870.....	1,395	22.88	1,314	21.55	1,983	32.52	1,406	23.05	24.3
1871.....	1,411	23.97	1,299	22.06	1,842	31.23	1,336	22.69	23.
1872.....	1,697	20.97	1,777	21.97	2,511	31.04	2,105	26.02	31.90
1873.....	2,115	26.88	1,726	21.93	2,278	23.95	1,750	22.24	30.27
1874.....	1,805	23.11	1,518	23.27	2,278	29.16	1,911	24.46	24.9
1875.....	2,190	24.45	1,909	21.31	2,680	29.92	2,179	24.32	24.95
1876.....	2,246	27.21	1,899	21.91	2,375	23.77	1,623	22.08	23.39
1877.....	1,723	23.55	1,613	22.04	2,317	31.67	1,693	22.73	20.15
1878.....	1,743	22.82	1,744	22.83	2,174	23.47	1,975	25.86	21.03
1879.....	1,947	26.30	1,615	21.83	1,959	26.43	1,877	25.37	20.33
1880.....	2,015	23.62	1,829	21.45	2,500	29.30	2,187	25.63	23.53

Table XIII.—Total Deaths each Quarter for the last Five Years, with the Aggregate and Average number from 1881 to 1875, inclusive.

	1876.	1877.	1878.	1879.	1880.	5 years, 1871-1875.	
						Aggregate.	Average.
January—March . .	2,246	1,723	1,743	1,947	2,015	9,218	1,844
April—June	1,809	1,613	1,744	1,615	1,829	8,529	1,706
July—September . .	2,375	2,317	2,174	1,969	2,500	11,569	2,318
October—December .	1,823	1,663	1,975	1,877	2,187	9,281	1,856
Total for each year .	8,253	7,316	7,636	7,398	8,531	38,617	7,724

Table XIV.—Total Deaths and Percentages per Quarter for the year 1880, with Aggregates and Percentages for the Ten Years previous.

	1880.		1870 - 1879.	
	Deaths.	Per cent.	Deaths.	Per cent.
January—March	2,015	23.62	18,272	24.25
April—June	1,829	21.45	16,624	22.07
July—September	2,500	29.30	22,397	29.73
October—December	2,187	25.63	18,025	23.96
Totals	8,531	100.00	75,318	100.00

Table XV.—Comparison of Vital Statistics of American

AMERICAN CITIES.	Population by census, or estimated July 1, 1880.	When taken.	Births reported.	Marriages reported.	Stillbirths reported.	Total number of deaths.	Annual death-rate per 1,000 of the population.	Small-pox.	Measles.	Scarlatina.	Diphtheria.
New York, N.Y. . . .	1,206,577	June, 1880	27,536	9,002	2,362	31,937	26.47	31	479	618	1,390
Brooklyn, N.Y. . . .	566,689	June, 1880	11,975	3,814	883	13,222	23.33	2	156	222	1,118
Utica, N.Y.	33,923	1880	759	128	22	483	11.70	..	2	..	7
Syracuse, N.Y. . . .	55,600	1880	292	135	59	846	11.5	..	4	..	47
Yonkers, N.Y. . . .	19,000	1880	368	118	18	269	14.1	..	..	1	2
Buffalo, N.Y. . . .	155,159	1880	3,653	1,124	127	2,568	16.5	..	16	69	151
Hudson Co., N.J. . .	187,950	1880	3,228	1,252	289	4,246	22.6	1	32	131	104
Alleghany, Pa. . . .	78,655	1880	780	521	50	1,000	12.8	..	10	38	66
Erie, Pa.	27,730	1880	?	?	50	441	15.90	..	..	12	37
Aurora, Ill.	11,925	1880	253	?	18	170	14.16	..	..	1	7
Peoria, Ill.	34,850	1880	674	?	18	514	14.24	..	6	60	40
Chicago, Ill.	503,298	1880	?	?	789	10,462	20.79	43	129	339	930
Boston, Mass. . . .	362,535	1880	10,654	3,651	443	8,531	23.53	1	49	33	588
Cambridge, Mass. . .	52,800	1880	1,650	448	50	1,003	18.99	..	4	5	38
Newburyport, Mass. .	13,600	1880	334	154	10	287	21.	..	..	13	12
Lynn, Mass.	38,284	1880	878	501	45	803	20.97	..	1	3	75
Providence, R.I. . .	104,850	June, 1880	2,627	1,232	119	2,080	19.83	..	3	242	61
St. Louis, Mo. . . .	350,522	June, 1880	17,339	11,181	561	6,635	18.92	..	55	46	118
Charleston, S.C. }	White	22,713	479	140	27	500	22.01	..	..	..	2
		June, 1880	..	..	..	..	..	..	..	..	..
} Col'd	27,277	June, 1880	909	128	142	1,121	41.07	..	4	..	7
		June, 1880	..	..	..	..	..	..	..	..	..
Richmond, Va. . . .	63,803	1880	1,880	573	171	1,750	26.90	..	3	4	14
Lynchburg, Va. . . .	15,959	1880	?	180	60	390	24.4	..	..	..	2
Norfolk, Va. . . . .	.. . . .	1880	?	238	51	760	34.6	..	4	1	71
Cleveland, Ohio . . .	161,458	1880	5,136	?	154	3,156	19.668	..	5	309	207
District of Columbia .	177,638	June, 1880	3,975	881	363	4,242	23.8	16	..	23	99
Milwaukee, Wis. . . .	115,761	1880	?	?	209	2,390	20.7	..	12	111	174
Baltimore, Md. . . .	332,190	June, 1880	8,826	3,260	636	8,043	20.41	1	12	400	293
Burlington, Vt. . . .	11,364	1880	314	93	12	207	18.21	..	..	..	9
New Orleans, La. . .	216,140	1880	2,738	1,298	350	5,623	25.98	1	97	56	81
Augusta, Ga.	23,023	1880	?	?	57	584	25.36	..	2	..	9
Savannah, Ga. }	White	18,229	?	?	39	362	14.85	..	..	..	18
	
} Colored	15,019	June, 1880	?	?	115	680	45.47	..	..	..	2
	
Wilmington, Del. . .	42,499	1880	?	?	31	935	22.	..	8	41	21

a, Incomplete.

? Information not furnished.

Cities for the Year ending December 31, 1880.

Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-spinal Fever.	Cholera.	Yellow Fever.	Relapsing Fever.	DIARRHOEAL DISEASES.		Phtisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under five years of age.	Per centage of deaths of children under five years of age to the total mortality.
								Children under five years of age.	Total of all ages.					
910	277	3	241	170	...	1	..	3,469	3,947	4,706	2,822	1,375	14,650	45.
420	111	...	71	3	...	..	..	1,407	1,602	1,736	972	495	6,215	47.004
8	17	2	8	...	...	..	..	?	?	73	28	10	139	28.77
47	23	...	16	3	...	..	..	?	?	143	...	16	289	34.16
7	3	...	3	2	...	..	..	28	32	55	24	14	113	41.
75	28	5	67	8	...	..	..	184	200	314	170	45	1,029	40.07
142	9	4	49	26	...	..	..	320	378	545	330	114	1,891	44.5
11	13	1	44	5	...	..	..	?	?	108	48	45	470	47.
3	...	...	12	...	...	..	..	?	26	66	?	?	230	52.15
5	...	...	9	...	...	..	..	13	18	21	8	2	48	28.23
...	...	2	22	...	...	..	..	?	?	57	13	2	109	34.82
533	68	11	171	76	...	..	..	?	1,052	853	633	348	5,640	53.91
186	94	...	154	?	...	..	..	829	1,003	1,452	650	310	3,349	39.26
13	9	...	8	3	...	..	..	99	111	161	80	23	361	35.99
6	1	...	6	...	...	..	..	10	16	51	14	4	77	26.82
14	3	...	24	...	...	..	..	55	59	115	78	9	262	32.62
29	11	...	52	4	...	..	..	129	146	322	170	56	732	35.2
61	79	...	139	36	...	..	..	488	649	786	539	...	2,937	44.26
4	3	...	25	6	...	..	..	?	51	58	15	8	139	27.8
...	27	...	31	3	...	..	..	?	89	196	36	21	316	46.08
2	42	1	39	9	1	..	..	?	?	288	71	29	788	45.02
8	5	...	4	8	...	..	..	6	14	60	22	7	128	32.82
5	...	...	11	1	...	..	..	?	94	89	52	3	345	45.4
88	86	...	70	21	...	..	..	805	?	?	?	?	1,618	50.26
80	37	...	71	9	...	..	..	278	335	761	329	118	1,907	44.9
63	7	...	20	20	...	..	..	?	163	184	115	46	1,331	55.7
173	148	7	196	28	...	..	..	661	740	1,221	463	74	3,802	44.78
3	5	...	3	2	...	..	..	25	27	36	6	8	96	41.58
39	70	1	52	10	14	2	..	162	331	863	309	136	2,008	35.71
6	...	...	17	...	...	..	..	?	94	75	52	2	250	42.75
8	1	...	5	...	...	..	..	?	?	48	16	2	123	33.97
...	5	...	9	...	...	..	1	?	?	103	75	6	233	34.26
21	2	...	24	...	...	..	..	?	?	133	39	9	413	44.19

Table XVI. — Comparison of Vital Statistics of Foreign

FOREIGN CITIES.	Population by census, or estimated July 1, 1880.	When taken.	Births reported.	Marriages reported.	Still births reported.	Total number of deaths.	Annual death-rate per 1,000 of the population.	Small-pox.	Measles.	Scarlatina.	Diphtheria.
London, England . . .	3,664,149	...	132,173	34,070	?	81,128	22.2	475	1,501	3,073	541
Liverpool, " . . .	544,056	1871	20,783	?	?	14,811	27.2	2	283	465	58
Birmingham, " . . .	394,738	1871	15,111	3,304	?	8,088	20.5	2	63	123	51
Sunderland, " . . .	116,730	1880	4,372	?	?	2,901	24.4	..	99	312	3
Borough of Kingston, Upon Hull, England	146,347	...	5,779	?	?	8,235	22.	1	34	77	12
Borough of Newcastle, Upon Tyne, England	149,366	1871	5,435	?	?	3,335	22.3	..	?	?	?
Merthyr-Tydfil, Wales	52,500	...	1,617	658	?	1,243	23.6	..	122	3	5
Glasgow, Scotland . .	538,988	1880	19,056	4,333	?	13,303	25.	2	331	453	150
Dundee, " . . .	155,100	1871 Dec.,	4,967	?	?	3,465	22.35	1	163	28	21
Berlin, Germany . . .	1,122,299	1880	44,112	10,829	1,749	32,823	29.65	9	376	872	1,198
Bremen, " . . .	112,114	1880	4,001	923	138	2,344	20.91	2	9	1	164
Frankfort-on-Main, Germany	136,831	1880	4,264	1,224	159	2,755	20.1	..	7	33	23
Köln, Germany . . .	144,735	1880	5,432	1,239	220	4,211	29.	5	87	304	182
Hamburg, " . . .	453,869	1880	17,628	4,164	606	11,188	26.15	..	180	486	1316
Stuttgart, " . . .	106,441	1880	3,672	755	171	2,378	22.43	..	22	5	78
Hanover, " . . .	122,860	1880	4,321	1,070	226	2,373	22.	..	24	61	138
Magdeburg, " . . .	97,529	1880	3,618	812	155	2,618	25.82	..	59	29	144
Königsberg, " . . .	170,933	1880	5,160	?	139	4,225	30.9	27	13	23	1173
Stettin, " . . .	91,745	1880	3,111	682	142	2,380	26.	..	8	68	72
Marseilles, France . . .	318,868	Dec.,	9,830	2,446	734	11,342	35.56	575	288	32	1442
Amsterdam, Holland . .	326,203	1880	12,360	2,537	678	9,360	29.53	..	373	43	21
Rotterdam, " . . .	150,309	...	5,794	1,244	317	3,638	24.20	..	15	15	13
Utrecht, " . . .	68,426	Dec.,	2,642	495	137	1,854	26.78	..	16	3	..
The Hague, " . . .	117,854	1880	4,555	1,035	195	2,690	43.81	..	27	5	5
Ghent, Belgium	134,852	1880	4,438	1,056	165	3,848	28.5	22	17	37	15
Boucares, Roumania . .	200,000	Dec.,	5,917	1,097	75	6,327	31.6	604	35	220	138
Christiana, Norway . .	118,107	1880	4,412	997	213	2,401	20.33	16	..	16	15
Moscow, Russia	601,969	1871	26,717	3,203	962	22,826	37.91	251	230	339	266
Havana, Island of Cuba	195,434	April, 1876	?	?	146	7,942	40.12	446	6	..	21
Calcutta, India	429,535	Nov., 1876	7,552	?	497	11,681	27.1	114	26	2	13
Madras, "	397,552	1871 Feb.,	16,077	?	398	14,907	37.4	869	106	?	?
Bombay, "	644,405	1872	17,247	?	1,253	21,146	32.81	207	1,324	..	4

EXPLANATIONS. — *b*, Cerebro-spinal fever included. *c*, Report for 1879. *d*, All fevers included. *e*, Bronchitis included. *f*, Simple fever included. *g*, Pleurisy and bronchitis included.

Cities for the year ending December 31, 1880.

Croup.	Whooping-cough.	Typhus Fever.	Typhoid Fever.	Cerebro-spinal Fever.	Cholera.	Yellow Fever.	Relapsing Fever.	DIARRHOEAL DISEASES.		Phthisis Pulmonalis.	Pneumonia.	Bronchitis.	Total deaths of children under five years of age.	Percentage of deaths of children under five years of age to the total mortality.
								Children under five years of age.	Total of all ages.					
570	3,438	b 72	689	...	...	...	✓ 126	3,538	3,957	8,029	4,173	11,138	35,901	44.3
180	663	87	134	...	...	...	...	.996	1,061	1,337	824	2,190	7,341	49.6
80	217	...	67	...	...	...	...	730	777	711	445	1,153	4,043	49.9
20	73	15	27	...	...	...	...	189	208	224	126	256	1,487	51.5
8	86	d 53	...	...	...	...	...	?	66	334	e 640	...	?	...
?	?	...	...	...	...	...	...	156	172	?	?	?	1,536	46.08
...	1	2	14	...	...	...	...	8	13	97	136	129	510	41.
132	709	39	298	...	...	...	...	299	420	1,571	g 2,816	...	6,071	46.
38	108	17	34	...	...	...	...	?	156	371	264	592	1,614	42.
224	854	...	506	45	...	...	35	5,456	5,603	8,830	1,713	826	19,532	59.51
...	40	16	?	27	...	...	...	?	184	413	e 274	...	1,029	43.9
10	56	...	27	15	...	...	5	269	278	522	194	94	1,168	42.4
...	36	50	...	...	...	...	...	204	?	596	316	117	1,401	33.3
...	176	112	...	...	...	...	...	1,039	?	1,348	e 930	...	5,474	48.9
64	31	12	...	12	...	...	...	309	313	247	229	33	1,279	53.7
...	43	25	...	106	...	...	...	128	131	381	106	83	1,113	39.
...	19	5	34	2	...	...	...	?	287	323	e 194	...	1,254	46.9
...	16	13	90	...	...	...	...	?	704	369	e 680	...	2,245	53.1
24	4	38	...	21	...	...	9	252	282	208	113	22	1,249	53.
...	84	...	365	402	11	...	1	1,210	1,748	983	1,431	516	4,031	35.53
71	179	36	131	...	...	...	...	578	615	808	e 1,257	...	4,461	51.39
14	55	4	10	...	...	...	11	46	61	336	e 556	...	1,877	51.5
4	66	...	12	?	...	...	...	?	60	i 174	...	...	?	...
11	32	...	15	...	...	...	...	?	?	i 232	...	497	1,382	51.3
16	66	k 95	...	...	...	11	...	980	1,041	508	e 479	...	1,905	49.5
51	24	23	252	...	...	...	...	449	604	723	748	218	2,869	45.2
53	115	...	30	...	...	...	...	376	406	416	157	185	1,236	51.06
83	305	181	247	...	...	1	...	202	?	3,127	13,127	2,647	10,955	47.99
40	...	...	159	318	...	892	335	212	709	1,629	240	120	1,734	21.66
105	64	26	451	...	...	805	...	170	1,267	444	73	91	3,978	34.
?	?	m 3549	...	...	...	2	...	?	?	?	?	?	7,239	48.5
3	21	...	11	...	...	30	...	299	734	2,710	877	1,035	9,635	45.5

EXPLANATIONS. — *h*, Croup included. *i*, Pneumonia included. *k*, Typhoid fever included. *l*, Phthisis pulmonalis included. *m* All fevers included. ? Not reported.

DIPHTHERIA.

As heretofore the Board has continued the sanitary inspecting of all houses in which a case of this disease has been reported. In all cases where any defects have been found notice has at once been sent to the owner or occupant, and subsequent examination made from time to time until the existing defects have been remedied.

The following table shows the results obtained from these examinations:—

WARDS.	Mistake in report as to locality.	Diphtheria on arrival.	Direct contagion.	Examination refused.	House closed.	Premises in good sanitary condition.	Full and offensive vault.	Full and offensive cesspool.	Filthy cellar.	Filthy house.	Defective drainage.	Public Institutions.	Decomposed animal matter.	Damp cellar.	Total.	Fatal cases.
I. . .	..	1	..	..	..	11	1	..	..	..	92	..	..	2	107	45
II. . .	..	..	..	..	..	10	2	..	..	..	86	7	..	..	105	34
III. . .	..	..	..	..	..	10	..	2	1	..	89	..	..	..	52	13
IV. . .	1	..	1	..	..	7	..	..	..	..	28	..	..	..	37	7
V. . .	..	..	1	..	..	4	3	..	..	..	23	..	..	..	31	7
VI. . .	4	..	..	..	..	19	8	1	..	..	110	..	..	..	142	37
VII. . .	1	..	..	..	..	7	1	..	..	..	34	..	..	..	43	20
VIII. . .	1	1	..	..	..	11	6	..	..	..	23	..	..	..	42	22
IX. . .	..	..	..	..	..	10	1	..	1	..	30	1	..	..	43	19
X. . .	..	..	..	..	..	5	3	1	..	..	18	..	..	..	27	9
XI. . .	1	1	..	..	..	13	..	..	..	..	30	..	..	..	45	19
XII. . .	..	..	..	..	..	13	3	..	..	1	62	..	..	..	79	23
XIII. . .	..	..	..	..	..	11	2	..	..	..	51	..	..	..	64	22
XIV. . .	..	1	1	..	..	17	..	..	..	..	56	1	..	..	76	30
XV. . .	..	..	..	..	..	11	2	..	2	..	51	..	..	..	66	30
XVI. . .	1	..	..	..	..	13	1	..	..	1	40	..	..	..	56	13
XVII. . .	2	..	..	1	..	20	..	2	..	..	21	..	..	..	46	10
XVIII. . .	..	1	..	..	..	11	..	..	..	..	37	5	1	..	55	38
XIX. . .	1	..	..	..	..	13	1	..	..	..	81	..	..	..	96	34
XX. . .	..	1	1	..	..	16	3	..	..	..	47	..	..	..	68	25
XXI. . .	1	..	..	..	..	16	5	..	..	..	36	..	..	2	60	22
XXII. . .	..	..	..	..	..	18	..	..	..	..	53	..	..	..	71	28
XXIII. . .	3	2	..	..	1	21	14	..	..	..	74	..	..	..	115	33
XXIV. . .	2	..	..	1	1	39	14	4	..	..	104	..	..	..	165	42
XXV. . .	..	..	..	..	..	1	1	..	..	..	22	..	..	..	24	6
	18	8	4	2	2	327	71	10	4	2	1,243	14	1	4	1,715	588

In the third column are placed those cases in which the disease was directly traced to contagion, and in which there was no question of the sanitary condition of the patient's surroundings. Unquestionably contagion was an element in the production of a large number of the cases. The last column but two contains a few cases which occurred in public institutions, an examination of which was left to the proper medical officers in charge of the buildings in which the cases occurred. No report of these examinations is kept in this office.

The following table shows the results of the examinations grouped together, with a view of presenting more clearly the relative proportion of healthy and unhealthy dwellings in which diphtheria has occurred:—

Diphtheria on arrival	8	
Direct contagion	4	
Premises in good sanitary condition	327	
Mistakes in physician's report	18	
Examination refused	2	
Houses closed	2	
Public institutions	14	
	—	36
Decomposed animal matter	1	
Damp cellars	4	
Filthy houses	2	
Filthy cellars	4	
Filthy cesspools	10	
Full and offensive vaults	71	
Defective drainage	1,248	
Premises in bad sanitary condition	1,340	
Total number of cases reported	1,715	

Of these 1,715 cases of diphtheria, 588 were fatal, giving a mortality of about 34 per cent. The mortality of the year 1879 was 33 per cent.

Of the houses in which diphtheria occurred 78 per cent.

were found to be in a defective sanitary condition. It is not, of course, to be understood that all the houses in which no defects were found were in a perfect sanitary condition, as some defect might have escaped notice.

SMALL-POX.

Much interest, and perhaps alarm, have been manifested within a few months, as to the immediate danger of another epidemic of small-pox occurring in our city, such as occurred eight years ago. While we do not anticipate a recurrence of such an epidemic we most fully concur in the warning given by the medical profession, for the purpose of securing vaccination of children and the re-vaccination of adults, as the only preventive measure against the disease. It has not been thought best by the Board to commence universal vaccination, and re-vaccination as allowed by the statute law, at the city's expense, while we know that the work is being rapidly done, as it should be, by physicians at the request and expense of individuals who are able and willing to pay for it. The central office, on Chardon street, however, has been kept open daily throughout the year (Sundays excepted) for the free vaccination and re-vaccination of all who may apply there for it. We are also about to establish, temporarily, places in the outlying districts where those who are poor and willing to apply may be vaccinated free of charge.

The utility, wisdom, and safety of vaccination throughout all civilized countries have been too thoroughly discussed, proved, and pronounced upon, to need any defence here by us. Experience has clearly shown that protection against small-pox by vaccination is best obtained by its successful performance in early infancy, again at puberty, and subsequently according to circumstances of exposure, etc.

It is also clearly shown by statistics that the production of three or four typical vesicles on the arm offers greater protection than one or two such vesicles. That the public may not suffer any imposition or danger from our vaccinations, the Board of Health will see to it that only pure animal virus is

used, and this by experienced physicians of good standing in the profession and community.

For the year 1880 we have had but four cases of small-pox in the city and three in quarantine. Those in the city arose as follows: On April 26th a man was found at the Custom House suffering from this disease, where he had applied for medical aid. He had been in the city five days, and came from Baltimore. He was removed to the small-pox hospital on the same day, and discharged well May 10th. On May 11th a case was found in the Mariner's Home, in North square. This man had been in the city but one day, and came from Philadelphia; he was removed to hospital, and discharged well May 30th. October 4th a colored man was found in the City Hospital convalescing from small-pox, and in a very low condition; he was removed to the small-pox hospital on the same day, and died Oct. 16th. This case is somewhat interesting, considering the movements of the man while suffering from the disease. According to the patient's statement he contracted the disease in Philadelphia, embarked on a coal-loaded schooner for Augusta, Maine, was taken ill with the small-pox on the passage, and when he reached Augusta was removed to a hospital. While convalescing from the disease, with the small-pox crusts still on him, he started for Philadelphia by rail via Boston; when he reached here he was quite exhausted and confused, and in this helpless condition he was found in the Old Colony Railroad Depot and carried to the City Hospital. The Board of Health was soon notified, and removed the man in a very critical condition to the small-pox hospital in West Roxbury, where he died, not so much from small-pox, as from the great fatigue and exposure incident to his remarkable attempt to reach Philadelphia. He was too sick to be allowed to leave the hospital in Maine, either to expose himself or those with whom he must have come in contact on the journey. The fourth and last case of the year was that of a man who had been in the city ten days, and came from Philadelphia. He was found in Hayward place, December 26th; was removed to the hospital, and discharged well January 11th, 1881.

During the first four months of 1881, three cases of small-pox have been found in the city. Two of these came directly from New York, and the third one contracted the disease from one of the other cases before it was discovered by the Board of Health. Two of them have been discharged well, and the other one now remains in the hospital doing well.

The small-pox hospital is on Canterbury street, in West Roxbury, is at all times in readiness to receive patients, and no delay need occur in dispatching the ambulance from that place for a patient at any moment.

TYPHUS FEVER.

In the month of April, this year, a family living at No. 12 Meander street, was suddenly seized with illness and made application for admission to the City Hospital. Six members of this family were admitted into the hospital from this house, and one subsequently from Centre street, under the supposition that they were suffering from typhoid fever. When they had been there but a few days typhus fever was suspected, and a consultation of the medical staff of the hospital was called, a majority of whom pronounced the disease typhus; and it was afterwards decided by the Board of Trustees, on advice of the medical staff, to retain the cases already in the hospital, under the circumstances; but that no more patients with typhus fever should be received, knowing them to be such.

It is the intention and duty of the Board of Health to take charge of persons suffering from typhus fever, as the disease is well known to be highly contagious and dangerous to the public health. In this instance, however, the patients had been made comfortable in the City Hospital, were in a degree isolated, the trustees and medical staff had kindly concluded to retain them, and the Board of Health saw no reason to interfere beyond an expression of readiness to take charge of the patients when notified to do so.

Except the seven cases mentioned, there have been no others in the city, to our knowledge. The origin of these

cases seemed to be traced easily to a person who had the disease in New York, and came directly into the family above named a few days before the outbreak of the disease.

GLANDERS.

This disease is highly contagious, and, though usually found to prevail among horses, human beings are not exempt from its attack. To prevent its spread, the Board in 1877 adopted a regulation forbidding the bringing into the city, or driving or keeping therein, any animal having glanders, and requiring the person having such animals in charge to report the same forthwith to the Board, and to dispose of the same under its directions. All cases reported to the Board are examined with the least possible delay by a veterinary surgeon, and if the animal is found diseased, as reported, it is ordered to be removed at once and killed. There is no known remedy for this disease, either in man or the brute creation, and hence the utmost care should be taken to limit its ravages. Experience shows, however, that there are those who, reckless of the consequences, will attempt to sell a horse as soon as they discover it affected with glanders. One such case came to the notice of the Board last year. A man in Chelsea, having a glandered horse, caused it to be driven through the city to Brighton and exposed for sale in the public streets, having concealed, as far as practicable, the indicia of the disease. He was prosecuted, and, though stoutly defended, was convicted and fined \$75 and costs, amounting in all to \$93, which he paid. A few examples of this kind will exert a healthful influence in preventing the violation of the regulation of the Board and the spread of the disease.

COCHITUATE WATER.

During a large part of last winter and of the spring the taste and smell of our drinking water in a portion of the city was such as to cause a great deal of complaint, and considerable anxiety as to its effect upon the health of the people. So great was the fear with many persons that they entirely

abandoned the use of water from the pipes, except for washing purposes, and bought water, at various prices and from various sources, for all drinking and cooking demands.

A great variety of theories as to the source of the bad taste and smell was expressed by the people, and as many different methods recommended for relief. The care of the water being in the charge of a competent commission and engineer, whose duty it is to make frequent and careful examinations of the water by skilful chemists, we referred all inquiries to them for a time, thinking it unnecessary to incur the expense of extra examinations. Complaints became so frequent, however, that a specimen was sent to Professor E. S. Wood, of the Harvard Medical College, whose report was as follows:—

HARVARD MEDICAL COLLEGE, CHEMICAL LABORATORY,
BOSTON, Jan. 17, 1881.

WATER ANALYSIS.

(Figures express parts per 100,000 of Water.)

BOSTON WATER.						
Free Ammonia.	"Albuminoid" Ammonia.	Chlorine.	RESIDUE.			Hardness English degrees.
			Fixed.	Volatile.	Total.	
0.0048	0.0254	0.50	5.50	10.50	16.00	1½

The above figures show considerable more vegetable matter than the average Cochituate water. The analysis does not show any dangerous condition of the water. The increased impurity is shown chiefly in the albuminoid ammonia, which alone means vegetable matter, the other figures being within normal limits. I cannot say whether the increased impurity is due to the very low condition of Lake Cochituate, or to the admixture with water from Sudbury river.

Signed,

EDW. S. WOOD.

We have only to add that, although we have not apprehended any serious effect upon the health of the city from the use of this water, yet we fully recognize the great annoyance and expense brought to our citizens by this most disgusting

condition of the drinking water, and beg to suggest that, whether the influence of such water be healthy or unhealthy; whether it arises from an unprepared water basin or the low state of the lake; whether the remedy costs little or much,—the people of Boston feel dissatisfied with the result, and are willing to pay the cost of clean, inoffensive, and wholesome water. An article of ingesta so universally and largely used by all classes, ages, and conditions, as is water, should be guarded with the greatest possible care. Its source should be pure, its storing-basins properly prepared and kept clean, and its transit to the consumer guarded against accident or possible injury. It is not enough to know that the water reaches us in a passable condition; that the chemist fails to find the evidences of the sewer or cesspool contamination in the water when it reaches us; or that there is no epidemic of typhoid fever, dysentery, or other decided manifestation of a polluted drinking-water. We should know that the streams which flow into such lakes and reservoirs are absolutely uncontaminated by the filth from privies, sinks, offensive trades, stagnant marshes, or from any other source. The storing-basins should be properly prepared by removing all such rubbish and vegetable growth as may decay and color, or otherwise damage the taste, smell, or purity of the water, and the lakes, storing-basins, and reservoirs should be well provided and secured against the introduction, accidental or otherwise, of any foreign animal or vegetable matters of any kind.

WELL-WATERS.

Four wells and cisterns have been suspected, during the year, on account of sickness or other cause. Chemical examination showed them all to be so badly contaminated with filth as to be wholly unfit for drinking or culinary purposes. A chemist's certificate has been obtained in each instance, and a discontinuance of the use of the water secured by filling up and abolishing the well or cistern.

The use of wells within the built-up portions of the city, for drinking and cooking purposes, is attended with con-

siderable risk, and the danger is rarely made known by the taste or smell of the water. People generally like the taste and coolness of well waters, and when accustomed to the use of one they think no other water equal to it. We have known several instances where the water of a well was considered of superior quality, and eagerly sought for, even after it was badly contaminated, and until typhoid fever, dysentery, or other sickness, led to suspicion, examination, and condemnation of the well by the Board of Health. The nearness of a privy vault, cesspool, or drain to the well should be carefully avoided, especially in a porous soil, and the water should occasionally be examined to test its purity.

ARSENIC IN WALL-PAPER, FABRICS, ETC.

The poisonous effects of arsenic in wall-papers, in the different fabrics, in toys, and in almost all colored useful or decorative articles, has, for many years, been well-known and constantly recognized by physicians. Frequent efforts have been made by philanthropic persons to suppress the use of this notorious poison in the manufacture of the articles referred to, but without much success. The proof of the constant danger to which all classes and ages are subjected in the use of or contact with these poisonous articles is ample and overwhelming.

We have instituted examinations of a large number of different shades of wall-paper and tinted papers, fabrics sold for dresses, or drapery, and one hat-lining which had been worn with considerable injury. We hope, during the coming year, to be able to effect some protection against this subtle poison, which is menacing the health and lives of persons in nearly every household.

The following is the report of Dr. Wm. B. Hills, of the Harvard Medical College :—

HARVARD MEDICAL COLLEGE, CHEMICAL LABORATORY,

BOSTON, May 1, 1881.

To the Board of Health :—

GENTLEMEN,—In accordance with your request, I have made a series of analyses of certain articles in common use,

which often give rise to accidental poisoning, owing to the fact that arsenic in some form enters into the composition of the pigments employed in their manufacture. The results of my examinations, which have been especially directed to tinted papers, wall-papers, and fabrics of various kinds, are herewith presented.

TINTED PAPERS.

Sixteen samples were analyzed. These were obtained from one of the largest dealers in this class of goods in this city, and comprised six red papers, five light green papers, four blue papers, and one lavender paper. All the reds and all the light greens were strongly arsenical. The remaining samples contained no arsenic. These results agree with those I have previously obtained with these papers. It may be stated, in general, that the reds and light greens commonly contain considerable quantities of arsenic, while the papers of other colors are for the most part free from arsenic. I have occasionally, however, found arsenic in the blue, orange, and lavender papers.

The presence of arsenic in these papers is explained by the use of arsenical pigments. The light greens owe their color to the well-known arsenical pigment, Paris green; the reds either to aniline colors (in the manufacture of which arsenic acid is used to a considerable extent, and which are not properly purified), or to other pigments to which certain compounds of arsenic have been purposely added as mordants.

These papers are used for various purposes:—to cover boxes; in kindergarten schools; as wrappers for confectionery and fancy articles; as covers for books and pamphlets; to make wafers, labels, price cards, advertising cards, tickets of admission to concerts, lectures, etc., window-curtains, lamp-shades, shades for the eyes, and for a variety of other purposes. In some form or other they are met with in nearly every household. The danger from them arises chiefly from the liability of children to put them in their mouths, and perhaps swallow them, when they produce the ordinary symptoms of arsenical poisoning. Several

cases have been reported in which serious symptoms have resulted in children from swallowing the green papers in some form or other. The danger is not, however, exclusively confined to children. There has been reported a case of poisoning in an adult from eating fruit upon which a price card made of one of these arsenical greens had rested. The fruit was moist, and had taken up a portion of the green pigment. Severe headache and irritation of the eyes have resulted from sitting by the side of lamps, the shades of which were made of arsenical green paper; and the same results have followed the use of green shades for the eyes.

WALL-PAPERS.

One hundred and nineteen samples, obtained from different dealers in this city, were analyzed. The results are herewith arranged in tabular form:—

	Number Arsenical.	Number Non-Arsenical.	Total.
Red Papers	15	12	27
Green Papers	6	14	20
Blue Papers	7	18	25
Yellow Papers	4	13	17
Brown Papers	3	12	15
Drab Papers	2	3	5
Pink Papers	0	3	3
Lavender Papers	1	2	3
Salmon-colored Papers	1	3	4
Total	39	80	119

Thirty-two per cent. of all were arsenical. These results correspond quite closely with those I have previously obtained. Thirty per cent. of all the papers I have examined this year (not including the above 119) have proved arsenical. In previous years the proportion has varied between twenty-five and thirty-five per cent. As these figures are based upon a large number of analyses, it is, I think, safe to

say that from one-quarter to one-third of all the wall-papers at present manufactured are arsenical. I find arsenic in red papers more frequently than in those of any other color; in the dark shades of red more frequently than in the light shades. Fully seventy-five per cent. of all the red papers I have examined during the past six months have been arsenical. Of the browns, the dark shades (bordering upon red) are, in my experience, more commonly arsenical than the light shades; of the greens, the light shades are the more liable to be arsenical; of the blues, the dark shades. The *proportion* of drab papers which are arsenical is not, in my experience, so large as is indicated by the few analyses recorded in the above table. Still, among the drabs some of the most strongly arsenical papers are to be found.

I have determined the quantity of arsenic in a number of wall-papers, and have found it to vary in the more strongly arsenical papers, ordinarily between .5 and 1.5 grains per square foot (estimated as white arsenic). Occasionally, where the arsenical-green pigments are present, the amount is still larger.

The above table shows how erroneous is the idea, even now quite prevalent, that arsenic is present in the green papers alone. Any paper may contain arsenic; the greens being less liable to contain it than some of the others.

The presence of arsenic in wall-papers may be explained essentially in one of three ways:—

1. By the employment of the well-known arsenical-green pigment, Paris green. This is not used so extensively as formerly.

2. By the presence of arsenic, as an impurity, in the aniline pigments.

3. By the presence in other pigments (chiefly coal-tar colors) of compounds of arsenic, purposely added by the manufacturer of the pigments, as mordants.

The use of arsenical pigments in the manufacture of wall-papers is entirely unnecessary. There are non-arsenical greens full as brilliant as the arsenical greens; while the

other pigments mentioned can be easily and economically made without the use of arsenic.

FABRICS.

Forty samples were analyzed. Nine of these contained a considerable quantity of arsenic. Most of the patterns analyzed were low-priced cotton goods, such as are commonly used for calico and cambric dresses. No woollens were analyzed, as they are not liable, so far as my experience goes, to contain arsenic. Five samples of the well-known Turkey red goods were examined; two were strongly arsenical. In one of these the amount of arsenic (estimated as white arsenic) was six-tenths of a grain per square foot. Of six cretonnes examined three were strongly arsenical.

The most dangerous of all fabrics is the material known as green tarlatan. This is, perhaps, not sold so much as formerly; still it is used to some extent for dresses and trimmings, and is also used at fairs to cover cake, fruit, etc., to protect them from flies. In this latter case the remedy is worse than the disease. The pigment with which it is colored is Paris green, which is only loosely applied, and is readily removed by the slightest handling. When worn upon the person every movement of the wearer causes the pigment to be thrown off into the surrounding air. Many cases of poisoning, caused by working upon this material and by wearing dresses made of it, have been recorded.

The presence of arsenic in fabrics other than green tarlatan is explained chiefly by the use of certain compounds of arsenic as mordants.

The only other article which I have examined by your direction is a hat-lining received from you some weeks since, which had severely inflamed a man's forehead, and which was found upon analysis to contain a considerable quantity of arsenic. The effects produced by wearing hats lined with arsenical linings are chiefly irritation of the eyes and eczema of the forehead.

The articles above enumerated do not comprise all into

the composition of which arsenic enters. Within a few months I have found arsenic in children's toys, wire screens, candles, writing paper, and playing cards. In all these cases the arsenic was present in the form of Paris green. Cases of poisoning from some of these articles have been from time to time reported in the medical journals, and doubtless all may, under favorable conditions, produce serious effect.

Respectfully,

WILLIAM B. HILLS.

CONFECTIONERY.

A few samples of confectionery have been obtained from some of the larger dealers in the city, and submitted to chemical examination, to ascertain if chromate of lead was still used as a pigment for coloring.

The following is the report of Dr. Hills:—

HARVARD MEDICAL COLLEGE, CHEMICAL LABORATORY,

BOSTON, May 1, 1881.

To the Board of Health:—

GENTLEMEN,—I have the honor to submit the following report, embracing the results of my analyses of the samples of confectionery received from you:—

Lot marked "J. No. 1" contained samples of red, yellow, and greenish-yellow candy. The coloring matter of the two reds was organic. One red contained a small amount of starch, the other was unadulterated. Each was carefully ignited, and the residual ash, which was small in amount, found to consist chiefly of alumina and oxide of iron. The alumina was doubtless in combination with the color. The oxide of iron may have been an impurity in the color, or it may have been purposely added to the color to give it weight. These candies are doubtless harmless.

The coloring matter of the yellow almonds was chiefly vegetable; but as the ash contained some compound, containing chromium, which behaved to heat like chromate of lead, it is probable that a small amount of the latter was mixed

with the vegetable-yellow. The amount of candy was not sufficient to enable me to extract the lead.

The coloring matter of the remaining samples was wholly organic and harmless. Each contained a considerable quantity of starch.

Lot marked "Co. No. 2" contained lavender and yellow almonds, a pink and yellow candy, and peppermints of various colors. The coloring matter in all these candies was organic. The peppermints were pure sugar; the remaining samples contained a considerable quantity of starch.

Lot marked "S. & A. No. 3" contained samples of red and yellow candy. The red coloring matter was organic. Of the yellows, one, a soft candy flavored with orange, owed its color to chromate of lead; one contained chromate of lead, although an organic yellow was also present; and two appeared to be colored with organic yellows alone. All, with one exception, contained a considerable quantity of starch.

Lot marked "W. No. 4" contained three red and three yellow samples. The coloring matter of the reds and of two yellows was organic; of one yellow, organic mixed with chromate of lead. Four of these candies contained starch. In one, a red, the amount was very large.

Lot marked "W. No. 5" contained samples of red, yellow, and white candy, and preserved fruits. The coloring matter of the candies was organic. Three of the samples contained a small amount of starch. The fruits (cherries, limes and citron?) were probably prepared by treating them with strong sugar syrup, and contained no injurious substance.

Lot marked "C. No. 6" contained seven samples of candy. The colors were white, yellow, red, brown, orange and green. The brown color, on the samples representing various kinds of fruit, contained oxide of iron; with this exception, all the coloring agents were organic. Six of these candies contained a large amount of starch.

Lot marked "C. No. 6," same as the preceding lot, with the addition of white almonds. These latter were largely adulterated with starch.

Lot marked "C. No. 6" contained seven samples of candy of various colors. The colors were all organic and harmless. Each of these candies contained a considerable quantity of starch.

Lot marked "No. 7, S," contained twenty-two samples. The colors were white, pink, red, yellow, and brown. The brown owed its color to chocolate; one of the yellows (the one containing a clove in the interior), to chromate of lead. The remaining coloring matters was organic. Thirteen of these candies contained more or less starch. In five the amount was large. Only five samples in this lot were pure sugar.

In many cases no attempt was made to determine the exact nature of the organic coloring matter. None of the colors were anilines, however. A majority of the reds were some preparation of cochineal, while the organic yellows were probably all vegetable yellows. In those cases where the candy was soluble in water no examination was made beyond a test for the aniline colors. A candy soluble in water, and free from aniline colors, may probably be considered harmless, since the metallic coloring matters and substances which are liable to be added as adulterants are insoluble.

Whenever, upon treatment with water, an insoluble residue was obtained, its nature was carefully determined. In five cases (all yellows) the insoluble residue consisted wholly, or in part, of chromate of lead. In one case the insoluble residue was oxide of iron. Adulteration with starch appears to be the rule, since a large majority of all the samples examined contained a considerable quantity. In ten cases the amount was very large. No attempt was made to determine the kind of starch employed. I have been unable, in the time allowed me for making these analyses, to determine the amount of chromate of lead or starch in any of the candies.

Terra alba (sulphate of lime) was not found in a single instance.

In those cases, where it seemed to me desirable, the candy was carefully ignited, and the nature of the residual ash deter-

mined. Except in those candies containing chromate of lead and oxide of iron, the amount was always trifling, and consisted chiefly of alumina, which was doubtless in combination with the organic coloring matter. These small amounts of alumina, in such combinations, are, I have no doubt, harmless.

Respectfully,

WILLIAM B. HILLS.

GENERAL NUISANCES.

The mud-flats in different parts of the city have been considerably reduced in area during the last twelve months, and the offensive odors therefrom proportionately lessened.

The Back-Bay territory has been largely improved by filling for the creation of the new park, and presents to-day but a fractional part of its original, unfilled, unhealthy, and unsightly condition. That portion which still remains unfilled, and which is still washed by the sewage of a large section of the city, will continue to be a source of offensive odors until relief shall be found in the use of the new sewer, which ought to have been completed long ago.

A remedy for the offensive condition of the flats in South Boston, west of Dorchester avenue, was sought last season by building a dam to grade six, across the channel, from the N.Y. & N.E. R.R. embankment on the west to Dorchester avenue on the east. This, it is hoped, will retain sufficient tide-water upon the flats to prevent any considerable annoyance from that quarter during the coming season. This dam must be considered only as a temporary expedient, however, and should in no way serve to postpone the only sure and needful remedy, which is to fill the entire territory now complained of as far as deep water, and to divert the present flow of sewage into the new sewer.

The commendable progress with which the railroad companies were filling their lands in the Charlestown District when we made our last report continued through the season, but ceased altogether in the fall, since which no filling has been done by any of the railroad companies. This filling

was ordered by the City Council, through the Committee on Health, for the abatement of a nuisance, under the authority conferred by an act of the Legislature of 1878. All work done under said act was to have been completed before the 26th day of April, 1881. The Board of Health, in February last, finding that all operations had stopped, the work less than half done, and the limit of time nearly reached, informed the City Council of the facts, and suggested the propriety of asking the Legislature to extend the time within which the filling under said act might be completed. The petition has been made by His Honor the Mayor, and the time will undoubtedly be extended. One portion of these flats, lying nearest to Rutherford avenue, and two others lying north, of the Lowell Railroad freight track, ought to be filled at once; otherwise much annoyance will be experienced by the neighboring residents during the coming season. By the terms of the act above referred to, and the order of the City Council, the railroads were authorized and did fill across the outlet of a large creek which opened into the mill-pond, and which conveyed the contents of a large sewer from the city of Somerville. This creek, with its natural waters and the filth of the sewer, soon raised and expanded the creek into wide proportions, filled the air with sickening odors, and began flooding cellars south of Cambridge street. The only feasible outlet to be found for this body of filth was a cut under the Lowell Railroad, and this was within the limits of Somerville. The city of Boston, by the terms of the act referred to, had been made responsible for keeping an outlet to this creek; the city of Somerville was interested in preserving an outlet for their sewer, and the residents of both cities were suffering seriously from the stench and inconvenience. In this state of things the Board of Health of Somerville united with the Board of Health of Boston in a contract to cut, pile, and sheath a channel nine feet deep, ten feet wide, and eighty-five feet long, at a cost of \$1,602, one-half of which to be borne by each city. This was done with all possible haste, and gave immediate relief.

SEWERAGE FOR THE CHARLES AND MYSTIC RIVER VALLEYS.

In 1879, and again in 1880, we strongly urged upon the attention of the City Council the importance of taking immediate steps for establishing a metropolitan system of sewerage for the several cities and towns which were discharging all their sewage into the Charles and Mystic rivers. The fouling of these rivers to such an extent is a serious peril to the health and comfort of the people who live along their borders, and the danger is increasing every year.

In 1879 we prepared and published maps showing the number and location of the numerous sewers that were discharging into these rivers. In 1880 we continued our appeal to the City Council, and cited the immense area (90,140,000 square feet) of flats that were exposed in these rivers at low tide, and their offensive condition. It was also shown, by the report of Professor Nichols, in our last report, that the foul condition of mud referred to was produced by sewage. There can be no doubt as to the offensive and unhealthy state of the rivers, the rapid increase of the foulness, or the desire of the people to find a remedy. The health and comfort of the people are interfered with and jeopardized by the foul air from these river flats. Some are compelled by circumstances to endure it throughout the summer, while others are able to flee from it for a time. The expediency of having the united efforts of the several cities and towns in one general scheme, for the sewerage of the whole territory, must be apparent, and to this end we have sought and still beg the interest of your honorable body.

As yet no move has been made nor one word spoken in our City Council with reference to this important subject. His Excellency the Governor made allusion to it in his inaugural address to the Legislature in January last, and that portion of the address was subsequently referred to the Committee on Public Health. A bill was drawn by some one who must have been familiar with the subject, and printed by the Health Committee during the session. It provided for the construction and care of a metropolitan system of sewerage

for the cities and towns bordering on the Charles and Mystic rivers, and was a credit to its author. It was not formally presented by the committee, owing to circumstances beyond their control, but it inadvertently gained publication, some discussion in the Legislature, and enlisted the general interest and hearty approval of the daily papers of the city.

We have recently learned that there is a prospect of the appointment of a commission by the Governor, to make surveys and report a plan for the sewerage of the district in question. We hope this will be done, and that before another Legislature convenes a proper plan will be ready for adoption, and that the construction of the sewer will be begun without delay. The cities and towns within this metropolitan health district would save the expense of building many unnecessary sewers within the next few years if some general plan for an intercepting sewer were adopted now. Many long new sewers, and all extensions of old ones required to reach deep waters, would be rendered unnecessary. We hail the day when the waters of the Charles and Mystic rivers shall be free of sewage, and their flats inoffensive; when the cities and towns along the Mystic and Charles rivers valleys shall find an easy and inexpensive method of getting rid of all their sewage and other filth, without making public nuisances in the rivers, by means of large sewers, or private nuisances on gardens and other private enclosures, by means of imperfect or overflowing vaults and cesspools, or open drains.

Under the impression that there is no limit to the capacity of a small garden spot to absorb and neutralize filth, the sewage and other house-drainage, with an abundant water supply, are made to flow continuously into these little gardens, or grounds, for generations. This is a serious mistake, for when the soil becomes saturated it no longer possesses the power of using up these liquids to any considerable extent, and in course of time the garden or grounds become a source of danger to persons living about them.

It can only be a question of time when all the well-built-up towns must provide a different means of drainage, but more

especially in those places where a general water supply has been obtained. It is, of course, possible in these towns to so care for and treat the excreta and house-drainage as to prevent any considerable nuisance or danger to the people without the water-carriage system of sewers; but it is not generally practicable, and it is rarely done. All efforts to utilize and properly dispose of house-drainage on the average garden lot, without offence and annoyance, in a built-up town, fail in ninety-nine cases in every hundred.

HOUSE-DRAINAGE.

The subject of house-drainage has been pursued by the Board during the past year with the same interest as heretofore, and we have been greatly encouraged by the active interest shown in it by the people. A very decided change of opinion is manifested everywhere in this important subject, and it becomes easier every year to convince people, and to obtain the desired improvements in house-drainage.

In 1877 we commenced examining houses from door to door, without reference to any complaint or supposed defect in the sanitary arrangements, taking every house in the block, and selecting the blocks in different sections of the city. Some blocks were taken on high levels, and some on low ones; some were among the new and costliest in the city, and others in the poorest localities, with a view of getting a fair average. The first year 351 houses were thus examined, and all the facts pertaining to the drainage and plumbing were carefully noted. The second year 718 were examined, and the third year 1,077, all having been selected in the same way.

The result was as follows:—

In 1877 the percentage of defective drains was.	.	55
The percentage of defective trapping was	.	78
In 1878 the percentage of defective drains was.	.	47
The percentage of defective trapping was	.	46
In 1879 the percentage of defective drains was.	.	34
The percentage of defective trapping was	.	26

These selections and tests have been made with perfect fairness, and without any suspicion of the result which obtains in these figures.

During the past year we have been able to spare the inspectors for only a short time upon this special work, and, therefore, only those streets were selected where it was known that the defects were numerous; and with the following results, which will amply show, not only the importance of the investigations, but the necessity of regulating the work of house-draining and plumbing.

SECTION 1.

Forty-four old brick houses, situated on a street in Ward 16, about grade 20, in fair condition, rented by mechanics, occupied by 347 persons.

Number of houses in the street	44
“ examined	44
“ in which bad odors were found	36
“ in which defective drains were found	30
“ in which defective trapping was found	29
“ having privy vault on premises	2
“ of such vaults found offensive	2
“ having damp or unclean yards	4
“ having damp or unclean cellars	1
“ of air-boxes found	3
“ of air-boxes improperly arranged	1
“ having water-closets	42
“ having offensive water-closet	12
“ having ventilation to soil-pipe or drain	2

SECTION 2.

Thirty old brick houses, situated on a street in Ward 10, about grade 18½, in fair condition, rented and used as boarding-houses, etc., occupied by 394 persons.

Number of houses in the street	30
“ examined	29
“ in which bad odors were found	20
“ in which defective drains were found	16
“ in which defective trapping was found	19
“ having privy vault on premises	0
“ of such vaults found offensive	0
“ having damp or unclean yard	0
“ having damp or unclean cellar	0
“ of air-boxes found	21
“ of air-boxes improperly arranged	0
“ having water-closets	29
“ having offensive water-closets	5
“ having ventilation to soil-pipe or drain	1

SECTION 3.

Seventeen old brick houses, situated on a street in Wards 7 and 8, about grade 43, in fair condition, used mainly as boarding-houses, and occupied by 174 persons.

Number of houses in the street	17
“ examined	17
“ in which bad odors were found	9
“ in which defective drains were found	1
“ in which defective trapping was found	10
“ having privy vault on premises	6
“ of such vaults found offensive	0
“ having damp or unclean yard	1
“ having damp or unclean cellar	1
“ of air-boxes found	9
“ of air-boxes improperly arranged	0
“ having water-closets	16
“ having offensive water-closets	3
“ having ventilation to soil-pipe or drain	1

SECTION 4.

Thirty-five old brick dwellings, situated on a street in Ward

10, about grade 17, in fair condition, used mainly as boarding-houses, and occupied by 555 persons.

Number of houses in the street	35
“ examined	35
“ in which bad odors were found	26
“ in which defective drains were found	19
“ in which defective trapping was found	26
“ having privy vault on premises	18
“ of such vaults found offensive	12
“ having damp or unclean yard	1
“ having damp or unclean cellar	0
“ of air-boxes found	30
“ of air-boxes improperly arranged	0
“ having water-closets	35
“ having offensive water-closets	2
“ having ventilation to soil-pipe or drain	1

SECTION 5.

Twenty-six old brick dwellings, situated on a street in Ward 7, grade 40, in a fair condition, used mainly as boarding-houses, and occupied by 317 persons.

Number of houses in the street	26
“ examined	26
“ in which bad odors were found	21
“ in which defective drains were found	20
“ in which defective trapping was found	14
“ having privy vault on premises	8
“ of such vaults found offensive	2
“ having damp or unclean yard	1
“ having damp or unclean cellar	5
“ of air-boxes found	16
“ of air-boxes improperly arranged	1
“ having water-closets	24
“ having offensive water-closets	3
“ having ventilation to soil-pipe or drain	0

SECTION 6.

One hundred and forty small brick buildings, situated on a street in Wards 11 and 17, grade 16, in good condition, rented and used by an intelligent class of people, and occupied by 910 persons.

Number of houses in street	140
“ examined	133
“ in which bad odors were found	72
“ in which defective drains were found	68
“ in which defective trapping was found	59
“ having privy vaults on premises	8
“ of such vaults found offensive	4
“ having damp or unclean yards	1
“ having damp or unclean cellars	4
“ of air-boxes found	87
“ of air-boxes improperly arranged	2
“ having water-closets	128
“ having offensive water-closets	12
“ having ventilation to soil-pipe or drain	22

SECTION 7.

Twenty-two old brick houses, situated on a street in Ward 16, grade 20, in rather poor condition, rented and used by the poorer classes of people, and occupied by 185 persons.

Number of houses in street	22
“ examined	22
“ in which bad odors were found	16
“ in which defective drains were found	12
“ in which defective trapping was found	17
“ having privy vault on premises	1
“ of such vaults found offensive	1
“ having damp or unclean yards	0
“ having damp or unclean cellars	0
“ of air-boxes found	1

Number of air-boxes improperly arranged	0
“ having water-closets	21
“ having offensive water-closets	10
“ having ventilation to soil-pipe or drain	0

RECAPITULATION.

Whole number examined	306
Bad odors found in	180
Defective drains found in	166
Defective trapping found in	174
Privy vaults found	43
Offensive vaults found	21
Damp or unclean yards	8
Damp or unclean cellars	11
Air-boxes found	167
Air-boxes improperly arranged	4
Water-closets found in	295
Offensive water-closets found in	47
Ventilation to soil-pipe or drain found in	27
Percentage of defective drains	54.21
Percentage of defective trapping	56.86

Regulations for house-drainage authorized by Chapter 133 of the Acts of 1877, and amended during the present session of the Legislature, have been in process of formation by the Board for some time, and will be issued in a few weeks.

The following is a list of nuisances abated during the year : —

Drains repaired	2,786
Vaults and privies cleaned and repaired	2,588
Traps to drain required	1,085
Cellars cleaned	673
Yards cleaned	506
Cesspools cleaned	240
Passage-ways cleaned	110
Vacant lots cleaned	114

Stagnant water removed from vacant lots	292
Receptacles for manure provided	43
Places from which fowls have been removed	93
Places from which swine have been removed	24
Receptacles for garbage supplied	80
Cellars vacated	3
General repairs	83
Goats removed	4
Sundry nuisances abated	332
Total	9,046

In addition to the above, the following list shows the number of places cleaned and disinfected : —

Streets	239
Places	317
Courts	220
Alleys	1,505
Yards	3,913
Vaults	4,994
Cellars	1,020
Cesspools	4,442
Gutters	1,340
Water-closets	502
Passage-ways	925
Urinals	353
Vacant lots	214
Old sheds	1,282
Vacant rooms	69
Total	21,335

PROSECUTIONS.

The whole number of prosecutions for violations of the health regulations during the past year was eleven, the same as in the year preceding. The total amount of fines and costs paid by the defendants in their prosecutions was \$119.50.

INFANT BOARDING.

The provisions of chapter 158 of the Statutes of 1876 require (under a penalty of not less than \$50, nor more than \$500) that whoever takes more than two infants under three years of age to board shall, within two days, report the name and age of such child, and the residence of the party undertaking its care, to the Board of Health; and gives the Board the right to enter and inspect the houses and premises where and while such business is carried on, and to direct and enforce such sanitary measures respecting such children and premises as it may deem proper. As heretofore, since the passage of this statute, a medical inspector has at regular intervals visited those places in which infants were reported to the Board as being boarded. During the year nine parties have reported and been registered as being engaged in this business, and in these nine places fifty-three infants were boarded.

Undoubtedly other parties were engaged in this business who did not report as required by the statute; but the Board has no legal right to enter the premises on suspicion that such business is being carried on without reporting the same, and it has not been able to obtain the requisite evidence to convict any party of carrying on the business illegally.

LYING-IN HOSPITALS.

The provisions of chapter 157 of the Statutes of 1876 make it a penal offence, punishable by a fine not exceeding \$500 for a first offence, and by imprisonment in the Jail or House of Correction, for a term not exceeding two years, for any subsequent offence, for any one to keep a lying-in hospital, hospital-ward, or other place for the reception and care of women in labor, without a permit from the Mayor and Aldermen, such permit to be granted on the certificate of the Board of Health, after due examination, that the person and place are suitable and proper for such business.

Only one license has been granted under this statute during the last year. The license for a hospital in Ferdinand

street has expired by its own limitation, and no application has been made for its renewal. The only hospital duly licensed is regularly visited, and inspected at regular intervals, by the medical inspector, and proper sanitary regulations enforced.

Two parties have been complained of during the past year for keeping a lying-in hospital without a license. They were convicted in the lower court, but appealed, and the case is now waiting trial in the upper court.

ABATTOIR.

The management of the slaughtering business at the Abattoir continues excellent, and the corporation by whom the establishment is conducted is entitled to high commendation for its unceasing efforts to make all the appliances for conducting the business in a satisfactory manner commensurate with its rapid development. During the past year the new slaughter-house has been extended by the addition of a refrigerator, the dimensions of which are 120×65 feet, the cellar of which was floored with hydraulic cement. The old houses, numbered six, seven, and eight, have been converted into a single slaughtering-room, with all the modern appliances, and a refrigerator has been erected in the rear of these, measuring 102×91 feet.

When it is understood that the full capacity of the Abattoir now admits of the slaughtering of from twelve hundred to fifteen hundred cattle daily, to say nothing of the sheep and other animals slaughtered here, the fact that this great business is carried on without occasioning the slightest offence to the neighborhood becomes a matter calling for hearty congratulation.

The number of cattle slaughtered at the Abattoir the past year was 88,896; number of sheep slaughtered, 319,974. The efficient Inspector, Mr. John H. Terry, has exercised constant vigilance to see that none but healthy animals are slaughtered for human food, and we feel confident that his supervision has been faithful and complete. The number of

cattle inspected by Mr. Terry was 126,700 ; number of calves, 5,595 ; number of sheep, 157,000 ; total animals inspected, 289,395. The number of carcasses inspected was as follows : beef, 94,750 ; veal, 5,620 ; mutton, 129,500 ; total carcasses inspected, 229,870. The amount seized as unfit for human food was as follows : beef, 25,266 pounds ; mutton, 874 pounds ; total seized, 26,140 pounds.

INSPECTION OF PROVISIONS.

The Board must repeat its opinion, previously expressed, that the inspection of provisions, as at present conducted in the city, fails to accomplish the purposes for which the department was established. The Inspector is not an appointee of this Board, nor is he in any way responsible to it for the faithful discharge of his duties. The results of an inefficient discharge of the duties of the office of Inspector of Provisions bears directly upon the health of the city. A large percentage of the city's mortality, especially during the summer months, is caused by diseases occasioned by the eating of decayed provisions ; and so long as little or no restraint is put upon the provision-dealers, so long will injurious consequences continue to manifest themselves. The Board has previously directed attention to the inefficiency of this important department, and repeats its notice with the hope that immediate steps may be taken for an entire reorganization of the department.

According to the reports furnished by the Inspector, Wm. F. Brooks, following is the amount of provisions seized by him : veal, 2,620 pounds ; lamb, 698 pounds ; beef, 1,036 pounds ; poultry, 344 pounds ; peas, 109 crates and 35 barrels ; cucumbers, 7 crates ; corn, 9 bushels.

PUBLIC URINALS.

Contrary to the expectation of the Board at the time of presenting our last annual report, no permanent additions have been made, during the past year, to the number of pub-

lic urinals maintained by us. In response to a petition signed by numerous residents of East Boston, praying that one or more urinals might be erected in that section of the city, the City Council requested the Board to provide them, and locations were unanimously granted, by the City Council, in Maverick and Central squares. A urinal was accordingly erected in Maverick square; but it had scarcely been completed before the residents in the vicinity rose up against the innovation, and petitioned the City Council to order its immediate removal. The hearing before the Committee on Health, to whom the subject was referred, showed the grievance of the petitioners to be more fancied than real; but, in deference to their delicate sensibilities, the petition was granted, and the structure was accordingly removed. After this unpleasant and unprofitable experience, the project of erecting a similar structure in Central square was indefinitely postponed by the Board, to await the final disappearance of a popular prejudice, that sacrifices health, convenience, and comfort to the merest squeamishness. Several localities in other sections of the city, not as yet provided with public urinals, have been examined with a view to supplying them; but no desirable places have been found where the same strong prejudices would not have to be met, in case urinals were erected on them, and the Board has preferred not to push its efforts in that direction at present. It is gratifying to be able to state, however, that our experience with the twenty-two public urinals erected, previous to the past year, has been such as to demonstrate their usefulness beyond a doubt, and to encourage the hope that their number will soon be largely increased without opposition from any quarter.

PUBLIC BATHS.

The first year's experience of the Board with the care and management of the public baths has been such as to merit approval. Bathing facilities have been furnished a larger number of people than ever before, and at a large saving of expense, as compared with previous years, when the bathing

department was under the control of the City Council. The appropriation of \$12,500 was found to be sufficient for furnishing ample bathing accommodations. In the ten preceding years, during which the management of the bath-houses was under the direct control of the City Council, the average annual expense of maintaining the public baths was \$27,945.23; showing a reduction in expenses for the past year, as compared with the average expenses of the ten preceding years, of \$15,445.23. This large decrease of expenditure has been partly owing to a reduction in the number of bath-houses; but it has been more especially due to the rigid system of economy and the careful supervision of the conduct of the department pursued by the Board.

The number of bathers during the last bathing season, from June 1st to October 1st, as compared with the number the previous year, is as follows:—

	1879.	1880.
Whole number men bathers . . .	198,509	269,259
Whole number boy bathers . . .	609,021	597,163
Whole number women bathers . .	69,274	71,739
Whole number girl bathers . . .	143,512	188,397
Total bathers	1,020,316	1,126,588
Increase over 1879, 106,272.		

It is believed that this estimate of the number of bathers is substantially accurate, or, at all events, not excessive. This increase is the more noticeable from the fact that three of the old bath-houses were discontinued at the beginning of the season. These were all situated in localities unfitted for bathing purposes, on account of the fouling of the water by sewage, and they were located sufficiently near to bath-houses not open to this objection as not to render their discontinuance any serious privation to those who had made use of them. The locations of some of the houses still in use are so fouled by the flow of the sewers as to necessitate closing them at low tide; but the accommodations they afford at other tides, in the densely populated sections of the city in

which they are situated, have been deemed sufficient to warrant their continuance.

During the bathing season twelve men, including a general superintendent, and seven women, were employed as keepers. Seven men, all of whom were practical mechanics, were employed under the direct supervision of the Board during the remaining months to make all necessary repairs upon the old houses, and two new floating houses have been built to take the place of old ones deemed unfit for further use. The beach at the L-street house, in South Boston, has been extended by the removal of the peat-bank which has hitherto encumbered it, and a foundation has been made for an enlargement of the dressing-rooms at this location. The three-years' lease of the beach at the foot of L street having expired the past year, a renewal of the same was made for a term of six years, at the same rental as heretofore paid. The lease of the bath-house location at the Sectional Dock at East Boston has also been renewed for one year, at the same rent as formerly, the Dock Company being unwilling to execute a lease for a longer period on the same terms.

Following is a list of the locations of the several bath-houses, together with the regulations adopted by the Board for their conduct:—

LOCATION OF BATH-HOUSES FOR MEN.

Foot of L street, South Boston	.	.	Beach House.
Dover street, at South Pier	.	.	Floating House.
Mt. Washington avenue Bridge	.	.	" "
West Boston Bridge, foot of Cambridge st.	.	.	" "
Craigie's Bridge	.	.	" "
Charles-river Bridge, near Causeway st.	.	.	" "
Sectional Dock, Border st., East Boston	.	.	" "
Maverick street, East Boston	.	.	" "
Chelsea Bridge, Charlestown	.	.	" "

FOR WOMEN.

Foot of Fifth street, South Boston	.	.	Beach House.
Commercial Point, Dorchester	.	.	" "

Dover street, at South Pier	Floating House.
Warren Bridge	“ “
Sectional Dock, Border st., East Boston . .	“ “
Chelsea Bridge, Charlestown	“ “

FOR MEN AND WOMEN.

1 Malden Bridge, Charlestown	Floating House.
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REGULATIONS.

(These apply to the management of all the houses, except as to the hours for bathing at the Malden Bridge Bath-house, which are modified as above.)

The baths will be open daily, except during unfavorable tides, from June 1 to October 1, as follows:—

MEN.	WOMEN.
Week days, 5 A.M. to 9 P.M.	Week days, 6 A.M. to 8 P.M.
Sundays, 5 A.M. to 12 M.	Sundays, 6 A.M. to 9½ A.M.

Each superintendent in charge will see that adults remain in the water not longer than thirty minutes, and children under twelve years of age not longer than fifteen minutes.

Bathers will be expected to provide their own towels and soap. Female bathers will be required to furnish suitable bathing-dresses. Those desiring towels can obtain them of the Superintendent in charge, at moderate expense.

Boys and girls under fifteen years of age will not be admitted to the bath-houses after 7 o'clock P.M.; and the decision of the Superintendent in charge against admission will be final.

Each Superintendent in charge will have full charge of his premises, and authority to withhold the facilities from all not conforming to these rules; and he will be required to render every reasonable assistance to bathers.

No smoking, profanity, or noisy conversation will be allowed on the premises; and any person guilty of defacing the dressing-room, fences, or tanks, by writing, marking, or cutting, or other misconduct, will be excluded from the baths, or arrested, according to the nature of the offence.

¹The hours for bathing at this house are so arranged that men and boys are admitted from 5 to 8 A.M., 12 to 3 P.M., and 6.30 to 9 P.M.; women and girls from 8.30 to 11 A.M., and 3.30 to 6 P.M. Sundays,—for men and boys only,—from 5 A.M. to 12 o'clock M.

All questions of priority in bathing, or the use of dressing-rooms, must be referred to the Superintendent in charge, whose decision will be final.

A police officer will be in constant attendance, for the purpose of preserving order and enforcing these regulations, in concurrence with the Superintendent in charge.

By Order of the BOARD OF HEALTH,

SAMUEL H. DURGIN,

Chairman.

32 PEMBERTON SQUARE, BOSTON, May 1, 1881.

SCHOOL-HOUSES.

The various school buildings throughout the city have been carefully inspected during the year, and the result of the inspection has been transmitted to the proper authorities. The defects pointed out have been promptly remedied, but the most constant vigilance is required to keep the buildings in proper sanitary condition. The loud complaints made a year ago as to the condition of some of the school-houses have not been repeated the past year, and there is every reason to believe that they will not be, so long as reasonable care is exercised by the authorities in providing the school buildings with proper drainage and pure air. It is the purpose of the Board to make a thorough inspection of the school-houses during the summer vacation, in order that they may be put in proper condition before the opening of the school year. Following is the result of the last inspection of all the school-houses in the city :—

In good sanitary condition	.	.	.	.	.	.	83
Defect in drainage	.	.	.	.	.	.	10
Offensive vaults	.	.	.	.	.	.	27
Offensive urinals	.	.	.	.	.	.	19
Filthy privies	.	.	.	.	.	.	1
Offensive water-closets	.	.	.	.	.	.	2
Offensive cesspools	.	.	.	.	.	.	1
Defective cellar floors	.	.	.	.	.	.	2
Damp cellars	.	.	.	.	.	.	2

QUARANTINE.

Quarantine was administered during the summer as usual, and without the occurrence of anything to mark the season as an uncommon one.

Three men affected with small-pox were removed from vessels, treated in the hospital at Gallop's Island, and all recovered. Two of these cases were removed from a passenger steamer from Liverpool, at different times, and one from a sailing vessel, which hailed from the West Indies. Vaccinations of the crew and passengers, and the disinfection of the vessel, followed in each case, and in no instance has any quarantinable disease reached the city from that source.

The physicians in immediate charge of the quarantine, and the officers of the department in general, have been active and faithful in the discharge of all duties that have been placed upon them. Gallop's, or Hospital Island, with all its appurtenances, the quarantine steamer, and the entire equipment of the department, is in perfect working order.

The examination of vessels coming into the port will be commenced this season on the 15th of May instead of the 1st of June, as has been customary, owing to the unusual prevalence of small-pox in many of the foreign ports.

BURIAL-GROUNDS.

There are some thirty-five burial-grounds, public and private, within the corporate limits of this city. Nineteen of these belong to the city, and seventeen of them are under the supervision of the Board of Health, Mount Hope and Cedar Grove Cemeteries being under the charge of boards of commissioners. The grounds under the charge of the Board of Health have been under the care of the same superintendents as in the previous year, and they need not be, therefore, specially commented upon, as in the last report.

Interments in graves in the grounds of the city proper have been prohibited for many years, while burials in the *tombs* of those grounds are still permitted. Interments in the grounds

of the Bennington-street Cemetery, East Boston ; Evergreen Cemetery, Brighton ; South-street and Walter-street, West Roxbury ; Dorchester, North and South, and Codman Cemeteries, Dorchester, and Bunker Hill, Charlestown, are still allowed.

The total number of deaths within the city during the last year was eight thousand five hundred and thirty-one. The number of burials within the limits of the city during the same time was five thousand seven hundred and thirty. The difference between these two numbers does not, however, accurately represent the number of those who were buried in the city out of those who died within the city, for many died here whose residence and friends were out of the city, and their remains were carried away for interment. Then, again, there are people living out of the city who own, by inheritance, or otherwise, an interest in some of the old tombs in the city proper (the use of which has long since been generally abandoned by the actual inhabitants of the city), and they exercise their right to bring their dead from the country and bury them in these tombs. This they will probably continue to do as long as such burials are permitted by the City Council. It is to be regretted that efforts to close these tombs to further burials have hitherto been unsuccessful.

Burials in fifteen cemeteries within the city having the largest number of interments during the past year were as follows : —

Calvary	2,059	Central	55
Mt. Hope	1,477	Dorchester, South . .	48
Forest Hills	677	“ North	42
Dorchester	613	Union	36
Cedar Grove	339	Evergreen	36
Bennington street . .	117	Bunker Hill	33
St. Augustine	112	Codman	23
Phipps street	62		

Of those dying within the city during the last year eleven hundred and forty-two were buried at Mt. Auburn and

Woodlawn Cemeteries, the number in each being about equal. These figures show that the great majority of the burials have been made in those cemeteries remote from habitations, and having constant efforts made for their adornment, from which no offence can come to the living, and where the remains will be sure of a quiet resting-place, amidst all that is pleasing to the eye and soothing to the feelings of their bereaved relatives and friends.

DISPOSITION OF WASTES.

The disposition of the different wastes of the city, including ashes, offal, street-sweepings, house-dirt, the dead bodies of dogs, cats, rats, and fowl, and all rubbish, of whatever nature, that is in any way mixed or contaminated with any decomposable animal or vegetable substances, is a question which has deeply interested the Board of Health, and which we wish to bring to the attention of the City Council.

There are collected in the city annually 147,980 loads of house-dirt and ashes, 26,000 loads of house-offal, 52,020 loads of street-sweeping, 8,727 loads of cesspool matter, and many thousands of small dead animals. These matters are more or less mixed one with another, and are capable, under favorable conditions, of making a great deal of nuisance. They are dumped in a great many places in the city. Sometimes it is only a matter of getting rid of the material in some out-of-the-way-place, and sometimes it is used as cheap filling in vacant lots, streets, alley-ways, etc. Many poor people use this material for raising the grade of cellars and yards in low places.

It will be admitted readily that there can be no objection to the use of *clean* ashes as filling anywhere; but the use of these *mixed* substances, decomposing and stinking as they are, under or near any habitation, should be as readily condemned by all thoughtful persons. Clean ashes must be considered a *rare* article in any city. The ash barrel or the ash heap is *universally* regarded as the grand receptacle and fittest place for any and all sorts of dirty articles, too numer-

ous and disgusting to mention, but well known in every household. Who will review the list, and then place his house over or near the place filled with such poisonous matter? House offal, which is not too largely mixed with ashes and other wastes, is taken away by the city carts and sold to farmers, and other persons, who feed it out to pigs, cows, and hens. This method we believe has seen its day, and requires a change. Feeding animals from selected and fresh substances from the table and kitchen is one thing, and feeding them from the mixture of an hundred incompatible articles, acids, alkalies, animal and vegetable substances, constituting one mass of sour and offensive material, is quite another.

Many hogs are killed by eating it, and we have no doubt the health, as well as the flesh for food, of all hogs, is unfavorably affected by it.

It is well known that where animals are fed upon a strong smelling substance it may be easily detected by smell or taste in the flesh of the ox, the milk of the cow, and the egg of the fowl. The mother may be indiscreet in the use of an article of diet or drink, and soon notice the ill effect in her nursing infant. Why should we expect immunity for the child who is fed upon the milk of cows that are fed on slops and sour offal?

Drive a steer through a garlic field, and you can smell the garlic from his flesh on the broiler, and on your plate. Feed your dog on decayed meat, and his breath and skin will drive you from his presence. The flesh and other products of the animal are characterized by their food, and yet the flesh of the pig, the egg of the fowl, and the milk of the cow, are used, without much thought as to what has entered into their manufacture. We will say, however, that we never knew a *farmer* to keep for his own use the pork made from this unnatural food; it is generally sent to market, and he makes the pork for his own use from wholesome food. Hungry animals will devour this stuff before starving, and in a measure nourish upon it; but that does not prove the fitness of the food, or the preference of the animal for it, so far as *domestic* animals are concerned.

The price paid by farmers for this material has diminished very largely within a few years. The decrease in the income to the city, notwithstanding the increase of material, has been over 30 per cent. in three years.

The greater distance to which it now has to be carried, to get beyond the thickly populated parts of the city, and the very objectionable features of the piggeries, for which this material makes demand, contribute to the increasing obstacles in the way of continuing the present method of disposing of our house offal.

It is practicable, and without any serious expense, to pass all of this 234,727 loads of material through a cremating process, and not only destroy at once all offensive odors and prevent any further decomposition, but produce from it valuable materials that would have an immediate cash value in the market. We are not prepared to say to what extent the cost of destroying or carbonizing this material would be returned in the sale of the products, but we are persuaded that a large part, if not all of it, would be so returned; and even were no other return made than that of filling our vacant lots, streets, and marshes with solid and clean material, such as this process would produce, instead of the present foul and disgusting matter, we should consider ourselves amply paid for all the cost attending the process of burning. Enough is already known of the actual working of the necessary apparatus to justify us in calling it a practical success, a sanitary blessing, and by no means a pecuniary failure. We respectfully but earnestly recommend that the City Council consider the propriety of adopting this method of treating the offensive part of our city waste, and we respectfully suggest that to this end a competent committee, agent, or officer of the government be directed to make such investigation of the process of burning these materials, and report thereon, as may bring the subject properly before the City Council for its action.

The sanitary authorities in England and on the continent are keenly aroused to the importance of this subject, and are now actively engaged in bringing into use a new method for

getting rid of this large amount of objectionable refuse without nuisance.

Last November the Sanitary Committee and the Medical Health Officer of London were authorized to investigate these new processes of disposing of refuse, and report the result of their observations. A deputation of this committee, with the Health Officer, in January last, visited the engineering premises of Manlove, Alliott, Fryer & Co., at Nottingham, the patentees of the machinery for burning refuse, and then visited Leeds, Bradford, Warrington and Manchester, at all of which places they found the furnaces and machinery in actual operation, and thoroughly examined the whole process.

The report of these investigations made to the Sanitary Committee of the Honorable Commissioners of Sewers, by Wm. Sedgwick Saunders, M.D., Medical Officer of Health of London (alluding to the deputation), concludes as follows: "From direct inquiry from the officials employed by the various urban and suburban sanitary authorities, who have adopted the system of cremation, they satisfied themselves of the economy effected by it as compared with the older methods, and are of opinion that its establishment in the city of London will effect an enormous saving in the charges now incurred under the existing regime. In one of the places above referred to they learned that the sanitary authorities had saved £5,000 a year out of a previous outlay of £17,000 a year; the old cost being £17,000 as compared with £12,000 under the process of cremation.

"The convictions, arrived at from a careful inspection of the various processes in active operation, were materially strengthened by the disinterested testimony of various municipal authorities, including the Mayors of Leeds, Bradford and Warrington, Aldermen and Chairmen of Sanitary Committees, Medical Officers of Health, Borough Engineers, and the persons actually employed in the business, all of whom combined the freest information with the most genial courtesy, and who, without exception, spoke in the highest terms of

approval. From the evidence thus collected, the deputation came to the unanimous conclusion, that the system recently inaugurated is sound in theory, and desirable in practice; that it has already passed beyond the experimental stage, and that it offers enormous advantages upon sanitary grounds, and is not to be despised for its commercial results; not only did they see a work consisting of poisonous and disgusting elements dealt with, and satisfactorily disposed of, without nuisance of any kind, but learned that products having a marketable value can be, and are, produced without any infraction of true hygienic principles, whilst at the same time they may have the effect of materially reducing the expenses."

APPOINTMENTS.

In conformity to the health ordinances the following appointments have been made by the Board during the year:—

On May 2, 1881, Chas. E. Davis, Jr., was chosen Clerk of the Board.

On August 27, 1880, the Port Physician, Dr. Chas. E. Woodbury, resigned; Dr. Alfred B. Heath was advanced to fill the vacancy; Dr. Chas. W. Allen was appointed Assistant Port Physician, in place of Dr. Heath, promoted. Dr. Allen resigned December 7, 1880, and March 1, 1881, Dr. Chas. A. Huse was appointed Assistant Port Physician.

In April, 1881, the following officers were appointed for the ensuing year:—

City Physician, DR. SAMUEL A. GREEN.

Superintendent of Health, GEORGE W. FORRISTALL.

Port Physician, DR. ALFRED B. HEATH.

FINANCIAL STATEMENT.

Amount appropriated for Board of Health,

1880, \$57,500 00

Expended as follows :—

Board of Health	\$9,000 00
Clerk-hire	6,280 00
Inspectors of Nuisances	10,715 33
Horse and vehicle, Board of Health	687 85
Stationery	375 15
Printing	589 40
Advertising	8 00
Abatement of Nuisances	9,111 02
Small-pox Hospital	2,597 86
Public Urinals	4,817 46
Burial-grounds	3,826 43
City Physician and Assistant	3,900 00
Inspector of Provisions	1,500 00
Inspector at Abbatoir	1,500 00
Horse and vehicle, City Physician	427 87
Contingencies	2,163 63
	<hr/>
	\$57,500 00

BATH-HOUSES.

Amount appropriated \$12,500 00

Expended as follows :—

Employés	8,685 20
Rent of beaches	1,286 69
Lumber	1,020 32
Hardware	424 59
Sundry items	353 22
Excavating at L street	180 32
Paints, brushes, etc.	158 21
Ice	154 00
Locks, etc.	47 05
Old bill contracted before Board of Health had charge	190 40
	<hr/>
	\$12,500 00

EVERGREEN CEMETERY.

Appropriation	\$1,500 00
Balance from last year	7 19
Income by sale and care of lots	604 42
	<hr/>
Total	\$2,111 61
Expended for care of Cemetery	1,996 61
	<hr/>
Unexpended balance	\$105 00

QUARANTINE.

Amount appropriated	\$14,500 00
Expended	14,075 95
	<hr/>
Balance unexpended and transferred to Sinking Fund	\$424 05

RECAPITULATION.

Amount appropriated : —

Board of Health	\$57,500 00
Evergreen Cemetery	1,500 00
Public Baths	12,500 00
Quarantine	14,500 00
	<hr/>
	\$86,000 00
Add income from Evergreen Cemetery	611 61
	<hr/>
	\$86,611 61

Expended : —

Board of Health . . .	\$57,500 00	
Public Baths . . .	12,500 00	
Quarantine . . .	14,075 95	
Evergreen Cemetery . .	1,996 61	
	<hr/>	86,072 56
Balance		<hr/> \$539 05

Of which latter sum (\$539.05) \$105.00 is carried forward to the credit of Evergreen Cemetery, and the balance, \$424.05, is turned into the Sinking Fund.

GENERAL INCOME ACCOUNT.

Abatement of nuisances	\$195 95
Licenses to collect grease	135 00
Small-pox, board of patients . . .	107 50
Sale of bath-house material	155 00
Refunded from Special Appropriation . .	14 30
Evergreen Cemetery	654 42
Fees from vessels at quarantine . . .	3,774 00
Board of patients at quarantine . . .	142 00
	<hr/>
Total income	\$5,178 17

Respectfully submitted,

SAMUEL H. DURGIN,
JAMES M. KEITH,
GEORGE F. BABBITT,

Board of Health.

REGULATIONS OF THE BOARD OF HEALTH.

• The following regulations have been made by the Board of Health, and are now in force : —

CONTAGIOUS DISEASES.

Ordered, That all vessels arriving at this port, which have on board at the time of their arrival, or have had during their passage to this port, any sickness of a contagious or doubtful character, which may be detrimental to the public health, shall be anchored at quarantine. No such vessel shall proceed, nor shall her cargo, or any part thereof, be discharged, nor any person be allowed to go on board or leave her while in quarantine, without the written permit of the Port Physician. And the Port Physician is hereby authorized and instructed to take such measures with regard to said vessel as, in his judgment, the health of the city may require. — (March 7, 1873.)

IMMIGRANTS.

Ordered, That all immigrants arriving at this port in vessels from foreign ports be detained thereon until an inspection of such immigrants has been made by the City Physician, with a view to the necessity of their vaccination. And the City Physician is hereby instructed to cause such immigrants who may not, in his judgment, be already protected against small-pox, to be vaccinated before leaving the vessel. — (March 14, 1873.)

FRUIT.

No person shall sell, or offer for sale, or have in his possession with intent to sell, in this city, any unwholesome, decayed, or stale fruit or vegetables. — (August 1, 1873.)

HIDES AND HORNS.

Ordered, That, from the first day of April to the first day of November, no green hides or horns shall be cured, stored, or be suffered to remain within the limits of the city, without a written permit from the Board of Health.

This order to take effect from the thirty-first instant. — (May 7, 1875.)

REMOVAL OF MANURE.

Ordered, That no manure shall be removed except in a tight canvas-covered vehicle, with the covering so secured to the sides and ends of the vehicle as to prevent the manure from being dropped or left in any street or way in the city, in process of removal, or loaded in nor upon any street, lane, or passage-way, nor upon nor across any sidewalk.— (May 10, 1875.)

LEAKY CARTS.

Ordered, That no person removing manure, house offal, swill, or filth of any kind, shall suffer it to leak or escape from any vehicle by him owned or driven, in or upon any street, court, square, lane, alley, wharf, or public enclosure, in the city of Boston.— (May 12, 1875.)

RENDERING.

By virtue of the authority given by Chapter 86 of the General Statutes, the Board of Health of the City of Boston makes the following regulation: That on and after Nov. 30, 1875, the trade or employment of slaughtering cattle, calves, sheep, or swine, or of rendering tallow or other refuse animal matter, shall not be carried on within the limits of the City of Boston, except on the islands of the harbor, or at the Abattoir in Brighton District, or at such other place or places as may hereafter be assigned by the Board of Health, — (Nov. 6, 1875.)

STREET SPRINKLING, ETC.

That on and after August 1, 1876, no filthy or offensive water shall at any time be sprinkled, poured, thrown, or put upon any street of the city.

Any violation of this regulation will subject the offender to presecution and a fine not exceeding one hundred dollars. — (July 28, 1876.)

KEEPING COWS.

That no person shall keep or allow to be kept in any building, or on any premises of which he may be the owner, lessee, tenant, or occupant, more cows than at the rate of one for each three thousand square feet of land, in or near the built-up portion of the city, without a written permit from the Board of Health.

Every person keeping a cow shall cause the place where it is kept to be well ventilated and drained, and kept at all times in a cleanly and wholesome condition. — (July 28, 1876.)

REMOVAL OF RUBBISH, ETC.

Ordered, That no person removing earth, dirt, sawdust, soot, ashes, cinders, shavings, hair, shreds, manure, oysters, clams, or lobsters,

waste water, or any animal or vegetable substance, house offal, swill, rubbish, or filth of any kind whatsoever, shall suffer it to leak, escape, or drop from any vehicle by him owned or driven, into or upon any street, court, square, lane, alley, wharf, or public enclosure in the City of Boston. — (September 8, 1876.)

SCARLET FEVER.

Ordered, That no child from any family in which a case of scarlet fever has occurred, or shall hereafter occur, shall, without a written permit from this Board, attend any school in this city until the expiration of four weeks from the commencement of the last case in such family. Such length of time shall be certified in writing by a physician, or some responsible member of the family, the certificate to be presented to the teacher of the school before the child is admitted. — (January 9, 1877.)

GLANDERS AND FARCY.

No horse, or other animal, having a disease known as glanders or farcy, shall be driven or brought into the city.

The owner, agent, or other person in charge of an animal so affected within the city, shall forthwith report the fact to the Board of Health, together with the name of such owner, and the place where the animal is kept, and it shall be disposed of under the direction of said Board.

Any veterinary surgeon, or other person called to examine or attend such animal, shall within twenty-four hours report to said Board the above facts and the type of the disease. — (Nov. 7, 1877.)]

DIPHTHERIA AND TYPHUS FEVER.

Voted, That in addition to the diseases (small-pox and scarlet fever) now required to be reported to the Board of Health, under Chapter 26 of the General Statutes, physicians who are called to visit cases of diphtheria or typhus fever, and householders in whose families such diseases may exist, will hereafter be required to give immediate notice thereof to the city Board of Health. — (Dec. 29, 1877.)

QUARANTINE.

Ordered, That, from the fifteenth day of May, 1881, until November 1st, 1881, all vessels arriving in this harbor from the following ports shall stop at the Quarantine Station, viz.: all vessels from any port in Europe, from the Western, Madeira, Canary, or Cape de Verde Islands; from the Mediterranean or Straits thereof, from the west coast of Africa, or around the Cape of Good Hope; from the West India, Bahama, or Bermuda Islands; from any American ports south of Virginia, including Central and South America; and also vessels arriving from any place in the United States or British America, where they may have touched on their way from any foreign port or place above named.

No such vessel can *leave quarantine, or discharge her cargo, or any part thereof*, without the written permit of the Port Physician, who is hereby authorized and instructed to take any measures in regard to such vessels, and to make such rules and regulations for their government while in quarantine as in his judgment the security of the health of the city may require.

And, for the permit so granted, the Port Physician shall have the right to demand and receive from each vessel, her master or owners, the fee established by the Board of Health.

Boston, August 7, 1878.

By virtue of the authority given in Chapter 26 of the General Statutes, the Board of Health of the City of Boston hereby forbids the exercise, after date, of the trade or employment of manufacturing fertilizers or guano from fish or other animal matter within the limits of the City of Boston, except on the Islands, at the Abattoir in the Brighton District, or at such other place or places as may have been or may hereafter be assigned by said Board; such trade or employment being in the opinion of the Board a nuisance, hurtful to the inhabitants, the exercise of which is attended by noisome and injurious odors.

SALT.

Boston, February 27, 1880.

Whereas, In the judgment of the Board of Health, the sprinkling of salt or mixture of salt with other matter, upon the public streets, ways, and sidewalks of the city, while snow or ice overlies the surface of the same, is cause of sickness and injurious to the public health; therefore,

Ordered, That no salt, or mixture of salt with other matter, shall hereafter be sprinkled, scattered, or put upon any public street, way, or sidewalk of the city, while snow or ice overlies the surface of such street, way, or sidewalk, without the written permission of the Board of Health.

QUARANTINE FEES.

May 20, 1881.

Ordered, That from and after this date the fees to be paid by vessels requiring to be examined at quarantine shall be as follows: for steamers, ships, and barges, eight dollars; for brigs, schooners, sloops, and other vessels, five dollars each. Such sums shall be collected of the master of the vessel before leaving quarantine, when practicable; and when not practicable the Port Physician is authorized in his discretion to take orders on the consignees, payable to the order of the City Collector. All fees for examining vessels, and all other moneys received by the Port Physician, shall be paid by him into the City Treasury.

REPORT OF THE CITY PHYSICIAN.

SAMUEL A. GREEN, M.D.

CITY PHYSICIAN'S REPORT.

CITY PHYSICIAN'S OFFICE, May 1, 1881.

To the Board of Health:—

GENTLEMEN, — I have the honor to submit the following report of this office, for the year ending April 30, 1881: There have been 2,841 persons vaccinated, and 1,123 certificates of vaccination given to children for their admission into the public schools. Vaccine virus has been furnished to twenty-five physicians, residents of the city. Visits have been made at the Jail daily, or oftener, as the occasion required, to see the sick; and 1,453 prisoners have been examined for complaints, real or feigned. The sick at the city prison have been seen whenever it was necessary. There have been made 246 visits at the Temporary Home, including the care of fifteen cases of childbirth. A physical examination of 136 men for the Fire Department, and of 179 men for the Police Department, has been made, in order to ascertain if they were qualified to perform their respective duties.

I have seen, also, 442 bodies of persons who have died without a physician in attendance during their last illness. These cases comprise, principally, those who die from chronic disease, where there has been no medical care for months before death, and those who die suddenly, though not under suspicious circumstances. They include, also, infants who die at birth, or soon after, with no physician to make the necessary returns. In such instances a careful examination is made, the symptoms learned, and a diagnosis reached sufficient for all practical purposes. The law requires a medical certificate of death before a permit is granted to bury a body; and these examinations are made in order to conform to the

law, as well as to collect the statistics for the bills of mortality.

In conclusion, I desire to acknowledge the hearty coöperation on all occasions of my assistant, Dr. McCollom ; and I wish also to thank your Board for the many acts of kindness and courtesy which, officially and personally, I have received at your hands.

Very respectfully, your obedient servant,

SAMUEL A. GREEN,
City Physician.

REPORT OF THE PORT PHYSICIAN.

A. B. HEATH, M.D.

PORT PHYSICIAN'S REPORT.

QUARANTINE STATION, DEER ISLAND,

BOSTON, May 1, 1881.

To the Board of Health:—

GENTLEMEN,—I herewith submit the following report of the Quarantine Department for the past year. The year has been an unusually busy one, but otherwise uneventful. My main endeavor has been to sustain the reputation which this department has enjoyed in former years. During the year 565 vessels were inspected, twenty of which were detained for fumigation and observation. The amount of fees collected was \$3,798. Three patients suffering from small-pox, and six from yellow fever, were removed to Gallop's Island Hospital for treatment; two men were also removed to the Hospital for observation. All recovered with the exception of one person, removed for observation, and, death ensuing in a short time, an autopsy revealed yellow atrophy of the liver as the cause of death. One thousand six hundred and ninety-one persons on infected vessels were vaccinated during the year.

The unparalleled emigration from all foreign ports to this country at the present time suggests inquiry as to whether ample safeguards are provided to protect our city from the introduction of infectious diseases now prevalent at so many foreign ports. The Health Officer of the Port of New York has recently called attention to the fact that small-pox on board the passenger steamers arriving at that port has been unprecedentedly frequent of late. In explanation of this state of things the Health Officer says: "The cases which are developed on or before arrival at this port constitute but a small portion of the unfortunate results consequent on the extensive infection of emigrants at the port of departure. The incubative period for small-pox—fourteen days—is so much less than the average passage of steamships from many

of the European and English ports that there is great danger of the disease developing far in the interior of the country. It will be apparent that no amount of vigilance at this port can prevent this result, since the inspected emigrant passes quarantine perfectly well."

The same remarks apply to this port, and I beg to suggest the propriety of your Board's considering whether steps should not be taken to bring about a uniform system of vaccination of all immigrants at all the principal seaports of the country immediately upon their arrival. The best method of securing this result is a question which deserves the serious consideration of our health authorities, in view of its important bearing on the sanitary welfare of the entire country.

The following table is given to show the number of cases of contagious diseases removed to Gallop's Island Hospital for treatment each year since 1867; also the number of deaths from each disease:—

	SMALL-POX.		YELLOW FEVER.		TYPHUS FEVER.		OBSERVATION.	
	Patients.	Deaths.	Patients.	Deaths.	Patients.	Deaths.	Patients.	Deaths.
1867 . . .	15	2	24	1	...	..	...	..
1868 . . .	11	2	1	1	...	..	1	1
1869 . . .	6	2	1	..	...	..	7	..
1870 . . .	59	10	2	1	...	..	6	..
1871 . . .	52	10	1	..	5	..	4	..
1872 . . .	412	158	...	..	3	..	1	..
1873 . . .	77	21	...	..	...	..	...	..
1874 . . .	...	..	...	..	...	..	...	..
1875 . . .	...	..	1	..	...	..	13	..
1876 . . .	7	4	2	..	...	..	10	..
1877 . . .	13	3	5	2	6	2	6	..
1878 . . .	...	..	2	..	...	..	...	..
1879 . . .	...	..	1	..	...	..	...	..
1880 . . .	3	..	6	..	...	..	2	1
Totals . .	655	212	46	5	14	2	50	2

¹ Under this head are included all persons detained at quarantine under medical observation. The fatal cases under this head were not due to either small-pox, yellow fever, or typhus fever.

The buildings on Gallop's Island are in excellent condition. The only building needed on the island is a storehouse. There is no building in which we could temporarily shelter an infected cargo, should it be necessary to do so. I would respectfully recommend that a building be erected for the purpose.

The steamer "Samuel Little" is in so good a condition that I am pleased to mention it. The captain and engineer, with their assistants, have labored so earnestly to accomplish this result that I feel it incumbent on me to bring the fact to your notice. The medical staff of the department has undergone several changes during the year. Dr. Chas. E. Woodbury resigned Aug. 27, 1880, and Dr. A. B. Heath was advanced to fill the vacancy. Dr. Chas. W. Allen was appointed Assistant Port Physician Sept. 1, and resigned Dec. 15, 1880. Dr. Chas. A. Huse was appointed Assistant Port Physician March 1, 1881.

I am indebted to Col. Guy C. Underwood, Superintendent of the Deer Island Institutions, for many favors and acts of courtesy.

In conclusion, it gives me great pleasure to acknowledge the many acts of courtesy and kindness, both official and personal, which I have received from the members of your Board.

Respectfully submitted,

A. B. HEATH,

Port Physician.

REPORT
OF THE
SUPERINTENDENT OF HEALTH.

EXPENDITURES FOR THE HEALTH DEPARTMENT.

HEALTH DEPARTMENT, 32 PEMBERTON SQ.,

May 2, 1881.

To the Honorable Board of Health:—

GENTLEMEN,— I herewith submit my annual report of the expenses of this department for the year ending April 30, 1881, the same being in conformity with Section 9 of an ordinance relating to Public Health.

Amount appropriated, 1880	\$340,000 00
Amount expended	335,471 37
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Balance May 1, 1881	\$4,528 63

The above amount, \$335,471.37, was expended as follows:—

For labor, collection and removal of house-dirt and ashes in city proper, South Boston, Highlands, Dorchester, West Roxbury and Brighton District	\$96,954 32
For labor in sweeping and cleaning the streets, and the removal of snow and ice from public walks, yards and squares	74,833 61
For labor in collection and removal of house-offal from hotels, houses, stores, and restaurants in city proper, South Boston, Dorchester, Highlands, and Charlestown,	57,091 17
Amount paid foremen, feeders, wheelwrights, blacksmiths, painters, harness-makers, watchmen, and driver of prison carriage,	20,578 31
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<i>Carried forward,</i>	\$249,457 41

<i>Brought forward,</i>		\$249,457 41
For grain used at city stables, south and west, Boston Highlands, Charlestown, and Brighton District	14,672 31	
For new horses and exchanges	11,585 00	
For hay and straw used at city stables, south and west, Charlestown, Boston Highlands, and Brighton District	11,460 14	
Paid for labor in cleaning cesspools in city proper, East Boston, South Boston, Charlestown, Highlands, West Roxbury, and Dorchester	10,631 33	
Official pay-roll, including Milk Inspector's office, and Inspector of Vinegar	8,975 00	
For the collection and removal of ashes in East Boston	5,941 50	
For the collection and removal of house-fal from East Boston, as per contract	2,866 68	
Paid for stock and tools in blacksmith shop,	2,540 43	
Paid for shovels, street-hoes, broom-cord, pick-handles, repairs on street-sweepers (Street Department)	1,974 54	
Incidental expenses, as follows : —		
Refreshments and carriage-hire	\$585 80	
Construction of telephone, and maintaining the same	622 60	
For lumber in constructing tool-house, and sundry other purposes ; repairs on harness shop, etc.	93 71	
Damage to horse by defective cesspool on Eighth street, South Boston	75 00	
Stabling, for baiting horses in East Boston and West Roxbury	38 90	
<i>Carried forward,</i>	\$1,416 01	\$320,104 34

<i>Brought forward,</i>	\$1,416 01	\$320,104 34
Paid for salt, matches, flour, soap, oil, vinegar, etc. .	35 57	
For blankets, horse-ropes, and mats	31 00	
For axle-grease and oil . .	27 52	
For hose and coupling . . .	27 00	
For locks, keys, butts, chain, brushes, etc.	23 68	
Directories, for office and stable use	23 00	
New rope, for stable use . .	20 15	
Damage to buggy by city cart,	20 00	
Flag and halyards (city stable),	19 48	
Washing bedding and towels for city stables	19 25	
Whips and horse-nets (stable use)	15 50	
For castor-oil	15 16	
Daily Advertiser (office use) .	12 00	
Veterinary text-books, 3 vols.	12 00	
Rubber horse-covers . . .	11 00	
Repairing stoves and funnels	9 45	
Ice, for stable use	9 00	
Repairing roof	8 00	
Repairing drain	6 80	
Pillows and bolsters . . .	6 75	
Toilet paper	6 50	
Cylinder and rings	6 16	
Soldering-iron and brand . .	5 62	
Washing office floors . . .	5 00	
Pulleys and blocks	4 45	
Repairing stove and boiler .	4 43	
Buffalo trimmings	3 88	
New England Dial (office use)	3 60	
Chamois skins	3 78	
<i>Carried forward,</i>	\$1,811 74	\$320,104 34

<i>Brought forward,</i>	\$1,811 74	\$320,104 34
Dials for watch-clock . . .	3 50	
Wagon umbrella . . .	3 50	
Wire screens . . .	3 00	
Carriage-cloth . . .	3 00	
New lanterns . . .	2 75	
Clipping-shears and comb . .	1 75	
Log-slate . . .	1 50	
Use of buggy . . .	1 00	
	<hr/>	1,831 74
Paid for stock and tools in wheelwright's shop,		1,587 63
Stock and tools in harness-shop . . .		1,275 57
Extra team work collecting ashes . . .		1,263 00
Lumber for cesspool stock . . .		1,147 22
Fuel and gas for city stables . . .		1,090 59
Water tax, 1881 . . .		1,042 50
Stable stock, consisting of curry-combs, brushes, sponge, soap, blankets, manure forks, etc.		814 43
Repairs on stables		780 72
Paints, oils, brushes, and varnish . . .		752 52
Medical attendance on horses, and horse medicines,		529 53
Advertising		502 91
Shoeing horses, West-end stable and Charles- town		443 34
Stock for brooms		407 28
Milk Inspector's office, analysis of milk, stationery, and advertising		379 13
Canvas for covering carts, and baskets for collecting ashes		358 98
Offal buckets, new hose, repairing old hose, lime, and brass caps		353 77
Sawing and planing cesspool and other stock,		339 36
East Boston Ferry passes, men and teams .		226 00
Printing notices, bill-heads, blanks, etc. .		130 19
Stationery for office and stable use . . .		110 62
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		\$335,471 37

The amount paid into the City Treasury, and credited this department, for material sold during the year, is as follows :—

Sale of offal	\$25,169 74
Sale of ashes, and labor	5,929 29
Removal of steam-engine ashes	2,840 95
Conveying prisoners	2,718 00
Sale of street dirt	1,349 53
Sale of manure	919 51
From Milk Inspector	676 00
Old material sold	275 75
All other sources	3 00
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	\$39,881 77

PRISON CARRIAGES.

There have been conveyed, during the past year, from the several police stations to the City Prison, under the Court House, 8,386 males ; 2,486 females ; total, 10,872, for which the Police Department is charged 25 cts. per head.

There have been conveyed, without charge, county prisoners, as follows :—

From Court-house to Jail	1,967
“ Jail to Court-house	741
“ Court-house to House of Correction	350
“ Court-house to steamer “J. P. Bradlee”	5,653
“ East Boston to steamer “J. P. Bradlee”	233
“ East Boston to Jail	116
“ Jail to East Boston	74
“ East Boston to House of Correction	26
“ Court to Boston & Albany Railroad	91
“ South Boston to boat	488
“ South Boston to Jail	172
“ Jail to Court-house	56
“ Court to House of Correction	29
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Total number conveyed	9,996

ASHES, STREET DIRT, ETC.

Collected by city teams : —

Total number of loads of ashes collected . . .	147,980
“ “ street dirt collected . . .	52,020
“ “ house offal, about . . .	26,000
“ “ cesspool matter . . .	8,727

The vehicles owned and employed by this department are as follows : —

Number of ash-carts	63
“ offal-wagons	43
“ street-carts	29
“ cesspool-wagons	14
“ sweeping-machines	9
“ water-carts	6
“ market-wagons	1

STREET-CLEANING.

There are employed in sweeping and cleaning the streets, 170 men, 29 carts, 9 sweeping-machines and 6 water-carts. Of this number, there are 82 men employed 9 months in the year sweeping. The principal streets are cleaned daily, and others twice in each week. The remaining months the teams are employed in removing house-dirt, and sweeping on crossings, and removing snow from sidewalks of public buildings. The number of miles of streets cleaned, 185 per week. The cost of labor for doing this work for the year ending April 21, 1881, \$74,833.61.

HOUSE-OFFAL.

There are employed in removing house-offal 91 men and 42 wagons. The offal is removed from dwelling-houses three times a week during the summer months, and twice a week

during the winter ; from hotels, markets, and restaurants it is removed daily. This material is deposited at depots, and sold to farmers from adjoining towns. The cost of labor for doing this work, ending April 21st, 1881, \$57,091.17.

HOUSE-DIRT AND ASHES.

There are employed in removing house-dirt 127 men and 60 carts ; the same is removed from hotels, tenement-houses, and stores, twice in each week, and from dwellings once a week. Bills for sale of ashes are forwarded to the Collector. The cost of labor for doing this work, for the year ending April 21st, 1881, \$96,954.32.

CESSPOOLS.

There are employed in cleaning cesspools 35 men and 14 wagons ; they are cleaned as often as required, and their contents conveyed to a dump, and immediately covered with ashes. The cost of labor for doing this work, ending April 21st, 1881, \$10,631.33.

MECHANICS.

There are employed 18 mechanics in manufacturing carts, wagons, and harnesses, and shoeing horses.

HORSE STOCK ACCOUNT.

1880.			1880.			
May	1.	On hand,	195	Jan.	26, Died,	1
June	17.	Purchased	1	"	26. Sold,	1
"	21.	"	3	May	1. Died,	1
Aug.	16.	"	2	June	9. Killed,	1
Sept.	21.	"	1	"	17. Exchanged,	1
Nov.	4.	"	3	"	21. Cedar Grove,	2
Dec.	11.	"	1	Aug.	16. Exchanged,	1
"	18.	"	1	Sept.	21. "	1
"	20.	"	2	Oct.	3. Died,	1
1881.				"	6. "	1
Feb.	18.	"	6	"	4. Exchanged,	2
Mar.	17.	"	2	Dec.	14. Died,	1
"	19.	"	4	1881.		
Apl.	15.	"	2	Apl.	30. On hand,	209
			<hr/> 223			<hr/> 223

Respectfully submitted,

GEO. W. FORRISTALL,
Superintendent.

